The Builder.

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The Amendment of Hospital Plans.—The Blackburn Infirmary.

IN our first extended notice of the designs for the Ashton Infirmary, we spoke of the building at Blackburn, as the model for plan which the majority of the competitors had had in mind, and which some of them had copied. It appeared to us so important in the present state of the subject of hospital construction, to learn exactly the nature of the works in progress at Blackburn, that we have taken means to obtain the fullest knowledge of them.

It is quite clear that a large amount of work in hospital-building, should be at once undertaken throughout the country. The effect of hospitals as they are, is to kill rather than to cure: a patient suffering from an easily curable ailment, is admitted to an hospital of the ordinary form of plan: the case shortly becomes dangerous, the patient having contracted a new illness from the hospital atmosphere: there might be still a chance were removal to pure air possible; but death ensues, with the full knowledge of the medical man that the cause of death was comprised in the means taken towards recovery. Recently built hospitals there are, besides that in progress at Netley, which repeat errors of the old construction. The Lying-in Hospital, in Quay-street, Manchester, we are told, is one of the number; and far better advised would have been the charitable supporters of the institution had they provided at the homes of the poor patients, the medical attendance, nursing, and comforts, which are alone advantageous, but set against terrific odds in hospitals as they are. At Macclesfield, where there are 30,000*l.* to be expended on an infirmary, we may expect, since the town has made itself in many ways remarkable for attention to sanitary improvement, that the old errors of arrangement will be avoided, and that improvements even will be effected on the plan adopted for Ashton, or the far better plan which it is our purpose to describe.

The more the question of infectious disorders is examined, the more it is perceived that the infection or non-infection is a matter of the ventilation. The amount of ventilation and air required in hospitals is immense, from the *volume* of the agencies of pollution, and it is on this account that we have perseveringly advocated the principle of arrangement where each ward is so detached from other parts of the plan, that it might be regarded as a distinct hospital. The architect may at first ask whether he is to give up, when he is planning an hospital, a principle, namely, concentration, which he has been in the habit of supposing was one needed for all good planning,—his judgment having been called for mainly in the right selection of the key-note, or the object and *focus* to which all others should be subordinate or made to tend. He may suppose that in the plan of an hospital, the kitchen or the washhouse should have this primary importance; and we have already shown that we should have felt the pertinence of the question, as regards one or other of these departments of the administration of an hospital. We now, however, answer distinctly, that concentration should be made to yield rather to diffusion of the parts, as principle: for, so paramount is the object of isolation of the wards, and planning the communications from one ward to another, so as not to be the means of conducting infection, that even the inconvenience of distance from the offices, must be accepted, although in the case of a building in which the kitchen might appear to be a first element in the plan. We entirely agree with Mr. Roberton (perhaps we have quoted the words already) that,—

"Until the architect will consent to give his organ of smell a few minutes' practical training, about six or seven o'clock in the morning, in a crowded surgical ward, he can never realize the importance of a truth, which can hardly be enunciated with too great emphasis—that not merely must a ward, if it is to be kept sweet, be ventilated in the ordinary sense of that term, but it must be so ventilated as to secure for it *the constant renewal of the contained air*—the displacement of the fœtid effluvia ever being emitted from the sick and wounded, and the substitution instead, of air, not drawn from cellars, corridors, and passages, but admitted direct from the store of the unpolluted heavens."

The Blackburn Infirmary now building, and the principal designs for the Ashton Infirmary, are practical admissions of the correctness of such views so far as the form and lighting, and ventilation of each ward, and of its own immediate accessories, are concerned. But, fully to attain the objects, it is necessary that the line of corridor or covered way for passing from one ward to another, should be separated from the wards by a lobby, for the same reasons that the closets, at the other end of the ward, are separated from the ward by a lobby independently ventilated.

The plan of the Blackburn Infirmary (of which the general formation was spoken of in a recent number), as we supposed was the case, is only a vast improvement upon the old plans in this country, and not a complete illustration of the "pavilion principle." Some, indeed, of the most eminent surgeons of the London hospitals, Mr. Roberton states, "go so far as to say that the placing of the blocks on opposite sides of a lofty, well-ventilated corridor," as in the Blackburn plan, is "superior to the Bourdeaux plan, which has blocks side by side. I am not sure as to the correctness of this notion."* Mr. Roberton's opinion is as to the very great merit which there is in the wards themselves, and in some other important features of the whole, as compared with plans where, throughout, the wards open from both sides, or from one side of a closed corridor, and beds are placed against dead wall; and where by the arrangement of the windows of a ward on one side of it only, there is no structural possibility of due ventilation, and the admission of desired light; and he has expressed no approval of the selected plan for the Ashton building, as contrasted with other designs, though a report has been circulated to such effect. He has pointed out improvements required in that selected design; but has never seen the drawings with which Mr. Lindley's design was in competition.

The building of the Blackburn Infirmary is the result of a subscription which, in August last, had amounted to 15,883*l.* 9s. 7d. of which 1,127*l.* 6s. 3d. were subscribed by the working classes. Mr. Wm. Pilkington, the mayor, to whom we believe is due the origination of the work, contributed very largely. The amount allotted to the building-fund, it appears, was 12,872*l.* 1s. 9d.

The site selected, whereon the carcase of the building is now advanced to the level of the joists of the one-pair story, is eight acres of elevated ground, south-west of the town, on the road to Over Darwen, and distant about three-quarters of a mile from the Town-hall, and perhaps a quarter of a mile from the outskirts. Though thus not far distant from factories, and such as appear to have no apparatus for the consumption of smoke, the Infirmary will be favourably situated in regard to the greater number of the factories and to the prevailing winds. The soil is a thin bed of dry stony clay and shale, two to three feet thick, over the rock, which in some cases had to be excavated. Concrete was specified at first, but ultimately was deemed not necessary. The plan eventually may comprise besides the central group, several wards arranged as separate blocks, with intervals of 20 feet, on opposite sides of a 10-feet corridor, as explained with sufficient clearness by the diagram (exaggerated as compared with the actual relative dimensions) in a previous number. There may be four or five blocks erected at the distances on each side of the central block; but the present works are for only two of the blocks for wards, besides the wards near the operating-room, which are in the transeptal parts of the block, at the back, as shown in the figure.

But temporarily wards will be formed in that portion of the centre which is parallel with the other blocks; and, as a central passage-way is required from the front entrance to the entrance at the back, it follows that these wards will not be disposed on the approved principles of hospital arrangement. As we have said, the arrangement is a temporary one; the partitions, the architect tells us, are not to be carried up to the ceiling; and each space, 27 feet 4½ inches by 12 feet 6 inches, will hardly allow beds to be placed against the partitions. But we shall look anxiously for the completion of the original project, and regret that any erroneous arrangement should be adopted even temporarily, in a plan which will be the subject of so much attention. On the erection of the remaining ward-blocks, the whole of the space we have spoken of, will be required for nurses' bedrooms and purposes of the administration. The very most that we can make of the accommodation for patients to be immediately provided, is as shown in the following table:—

In the two wards of the projecting wing-blocks, eight beds in each,—the space on the ground-story in their case being devoted to the matron's and surgeon's rooms in one block; and to a board-room, a library, and a secretary's retiring-room, in the other.....	16 beds.
In the two wards for patients, after operations	8 „
Temporarily, arranged as described, say at most	8 „
Total.....	32 beds.

This is a very small amount of provision for a large town with a population much subject to casualties; and we had supposed that twice the number of beds were to be provided at once, for the expenditure of a smaller sum of money. We do not hint that there is the slightest blame to one who, of course, had something to learn from this his first work of the kind: on the contrary, it would have been accordant with our views that the Ashton committee should have sought for an architect who was in the position of the architect to the Blackburn Infirmary, rather than have announced a competition, and decided upon a plan at all hastily. Equally, the desire on the part of the committee at Blackburn to do their work well, decoratively as well as structurally, has our full approval. We must say, however, that in every point of view there would have been advantage in planning the wards for a larger number of beds. We have already adverted to Miss Nightingale's opinion in favour of a number of beds, twenty to thirty-two, given chiefly under the conviction that large, rather than small wards, were favourable to the circulation of air; and the Blackburn building, besides what is obvious in the necessities of accommodation, would have utilized more economically the ground and money spent, through an arrangement providing for considerably more than eight beds in a ward. Twelve patients, the architect informs us, he has found could be attended to by a single nurse; and Mr. Robertson, we believe, inclines to the number fourteen or thereabouts; but Miss Nightingale says, wards of a small size are "decidedly objectionable, because unfavourable to discipline:" a head-nurse, one to each ward, "is essential to discipline, and a sufficient number of such nurses

* "Extract from a letter dated July 6, 1858, to the secretary of the Blackburn Infirmary," printed at Blackburn, with list of donations.

cannot be allotted in smaller wards. One head-nurse can easily overlook forty patients in one large ward. In four small ones it is almost impossible. In the event of a death taking place in the ward, the survivors, when they are few in number, are far more likely to be affected by it than a larger number."* Wards of 15 to 17 feet in height, planned for twenty to thirty-two sick," are better for the purposes of ventilation than wards half the size; and are less subject to a hospital atmosphere than wards of double the size," though the latter size may be perfectly healthy if the height be increased so as to be in proportion to the width. But with all the short-comings of the Blackburn plan, as compared with the French plan (two examples of which we have published), it is only necessary to draw consideration to them; and the arrangement is, as we have said, an important step in advance. We proceed with our description.

The building, generally, will consist of two stories above an elevated basement; and there is an attic story in the first portion of the central block, giving importance to the centre, and providing increased space for servants' apartments. The advancing centre and wings which form the design, from the principal point of view, are appropriated,—the centre, to the entrance-hall, over which is the chapel; and the wings, to the wards on the first floor; and the apartments under them, which we have already described In the recesses, between the centre and the wings, are on the ground-floor the house-dining-room and the students' room of one story only, so that there is a small terrace-stage over, where convalescents might take the air, and the through-ventilation by windows to the corridor of communication on the one-pair story is not interfered with. There is no distinct nurse's room to each ward, and, as we have said, no intervening lobby at the entrance, but that arrangement was adopted by many of the competitors in the Ashton case. At the farther end of the ward from the door, leading out of the corridor, is a bath-room and a ward-scullery, with a shoot into the basement, for bandages and dirty linen. A lobby also leads into a space for two closets, which forms a projection at the end of the wing, and has openings in the returns, to get a through-current at right angles to the lobby. A large window in the centre lights the lobby, and forms a chief feature in the decorative design. On the opposite side of the corridor of communication, in line with the wards each, are the staircases; and corresponding parts, opposite the wards, in the exteusion of the plan, will be appropriated to reading-rooms and dining-rooms for convalescents. The staircases are not ill planned, in comparison with staircases in London or in Lancashire. In the latter locality, indeed, the stairs are not unfrequently dangerous, from excessive height of the risers. But for hospitals, stairs should be specially planned, and with risers of less than six inches. At the ends of the corridor of communication are balconies, over doors in the ground story, which lead into gardens.

The wards will measure 39 feet by 23 feet, and will be 16 feet 3 inches in height. Thus each of these principal wards will afford very nearly 2,000 cubic feet of air space to each of the eight patients. The ward, with its accessories, will be lighted by six windows on each side, each measuring 3 feet in the opening of brickwork, and 9 feet to the crown of the arch in height, 2 feet 7 inches being the height of the cill from the floor, and the distance of the crown, from the ceiling, being about 4 feet 9 inches. Over the windows, however, are openings for ventilation, each in dimension 3 feet by 1 foot 3 inches. These will be filled with perforated zinc. The piers between the windows are from 5 to 4 feet in width. The ward will be heated by two open fire-places, one at each end, of which the openings will be 5 feet in height. Some of the arrangements for ventilation have, perhaps, still to be decided upon. The flooring of the ward will be of pitch pine, waxed and polished, carried by joists and girders, all of wood. Fire-proof construction appears to be employed only in the staircases and corridors, and in the ground story arching over the basement. The walls and ceilings will be finished in Parian cement. With reference to the important question of aspect, and of the direction of the axis of the wards each, we may say that the front of the building appears to face the north-west; that is, the axis of each ward would point north-west and south-east, and not north and south, as advised by one of the competitors at Ashton. Mr. Roberton, as we gather, has a feeling that the front should face the sun at one o'clock, but does not feel satisfied to put forward a positive opinion; and he suggests that there may be an argument for having the front so that it would be impinged upon by prevailing winds, although not in the case of an hospital to leeward of any smoky town.

In the central block of the plan there will be on the ground story, entrance-halls, one at the front, and another at the back, and reached from the latter, and from a separate road. There will be in the transeptal portions of the plan an accidents' receiving-room, and a dispensary. Adjoining the latter, in the same story, will be an out-patients' waiting-hall, of considerable dimensions, and the remainder of the central part of the plan is devoted to the surgeons' consulting-rooms, the matron's store-room, the surgery, washing-closet, and the porter's bed-room. There is a mezzanine over part of the plan, which is to be used as a drug store. We have explained the appropriation of the wings in the front, and of the one-pair story generally; but may mention that, attached to the operation-room and wards in the transeptal parts of the plan, will be a surgical instruments room, and the required bath-rooms, and closets, and nurses' rooms. The whole area of the basement in the portion of the building now erecting will be given up to the kitchen and offices. The kitchen will be close to the position on plan of the grand corridor, hoists being contrived for coals and articles of food. In the rear will be the wash-house, laundry, scullery, and laboratory. An under-ground way is provided, externally, to the site which is intended for a dead-house.

The decorative design, as may have been understood already, has been altered since the first drawings were made. The object, that of giving to the building increased decorative character, so that it might be in all respects an honour to the town, and towards which the members of the committee came forward nobly with contributions, is one such as cannot but have our warm sympathy. It is well, however, that we should not allow the idea to prevail that increased effect is to be obtained merely by the increased expenditure of money; and the present case is one where we believe the architect has not much improved upon his original conception by the fresh means allotted to him. The decorative and the useful, so called, both are important; but, in the present case, considering the objects, and without reference to the skill exhibited, as without abatement of our views of the value of decoration, we would rather have seen any available amount appropriated to the perfection of the plan. Besides, it is to be logically inferred that an architect does not necessarily improve upon his original conception by alterations; second thoughts are not always best, and especially so where the thoughts do not form the original foundation, but take up the project when it has been already commenced, and its character to some extent confirmed. In an entirely new building the case would be different, and the architect would utilize, without detraction, the full experience he had gained.

The general character of the design we must describe, for want of more precise phrase, as French Italian, or as that Palladian in which the superimposed orders are used, to which are added the high-pitched roofs to pavilions. This character, however, is chiefly exhibited in the prominent parts of the building and plan, where masonry is employed. A considerable portion of the building is of red brick, with white stone in bands across the piers,—the archivolts and consoles, and the entablatures, and the whole of the basement story which has small square windows above ground, being of stone. The bricks are made partly on the ground, and partly on ground closely adjoining. The cost of their making, with that of the clay, is 19s. a thousand for the common bricks, and 26s. for bricks for the facing, which are pressed. There is good character in the front—though the mouldings are in some cases much too minute, to contribute, as they should, to the effect from a distance. The porch, at the principal entrance, with its side windows, forms a group carried up in two stories, and has salient columns in the upper story. The parts breaking forward at the ends of the wards are likewise emphasized by the treatment of the pilasters and four-feet window-openings; and the friezes, in these parts, are enriched with scroll-work. The angles of the wards are decorated with rusticated coupled pilasters, Ionic in the upper story, forming piers, with ornament in the frieze; and chimneys are carried at the angles. The ordinary windows have archivolts rising from impost-mouldings, and consoles triglyphed on the face. Ornaments, similar in character to these last, occur at regular distances in the frieze.

The drainage from the Infirmary will pass into the river Darwen. There are two principal streams at Blackburn, but of very moderate size; and their present condition would serve as accurate illustration to the description and remarks we have before printed, on the lamentable state of the drainage of the manufacturing towns of Lancashire. We have evidence, however, that the question as regards Blackburn is receiving some attention. The drainage of the town is now being altered, and is to be carried to a point on the Darwen, about two miles from the Townhall.

The original contract for the infirmary was taken by Messrs. Benjamin Abbott, and John Hacking,—the former for the carpenter's, plasterer's, plumber's, glazier's and painter's works; and the latter for the mason's, paviour's, bricklayer's, and slater's. The manner in which the work is done so far, is certainly creditable to the contractors; and the materials are of excellent quality. The whole amount at present involved in the contract may be stated as very nearly 10,000*l.*—the Infirmary committee, however, supplying the bricks. The principal stone used is from the Butler *delph*, or quarry, in the township of Pleasington. It seems an excellent material for durability, save that it is occasionally spoiled by black, clayey spots and streaks, which may enter for some depth into the stone. When good, it is better in appearance, and we should suppose is cheaper to work, than the more crystalline stone used in the south of Lancashire. The Longridge stone, which is more generally used in North Lancashire, has also been used in this building; it is marked by yellow streaks, and is not considered so good as the other stone mentioned. Cunliffe stone is used in the steps; and the corridors will be paved with flags similar to Yorkshire flags, but brought from Haslingden. The brick arches over the basement are carried on wrought-and-riveted iron girders, having a bearing of 19 feet or 23 feet. Skew-back bricks are moulded specially to fit into the sides of the girders for the springing of the arches, which have a span of 6 feet 4 inches to 6 feet 6 inches. The centering was in great part suspended from the girders by iron hangers, or stirrups. The general walling is built with a cavity of 3 inches, and two brick lengths, to amount to a thickness of 21 inches. In executing the work, openings are left at the floor-line of each story, in order that the cavity may be properly cleared out before the work is left. The quantity of the stone on bed, and bond with the brickwork, would be remarkable to any one judging after experience chiefly of London buildings. The balconies and door-cases to the ends of the corridors, which, like the principal doorway, have considerable decorative character, are not permanently fixed, but placed so as to be removable easily when the extension can be proceeded with. Mr. John Simpson is the architect's clerk of the works. The credit of the design was first ascribed to Messrs. Smith and James Turnbull; the latter of these, however, who made the design, is now the architect. The effort made in this hospital already reflects great credit upon Mr. Pilkington and the town of Blackburn; and we hope that the completion of the work will be satisfactory to all the parties concerned. Certainly every care should be taken, and we have no doubt is intended to be taken, in what will form an important precedent for one part of the country at least. There are many details which we have not looked into. The manner of glazing and opening the windows is one of them.

* "Evidence given before the Royal Commission on the Sanitary State of the Army,—reprinted, with some Alterations, with 'Notes on Hospitals.'" J. W. Parker. 1859.

CARVED FITTINGS FOR ST. MICHAEL'S CHURCH, CORNHILL.

THESE fittings, executed, as we have already mentioned, by Mr. Rogers, under the direction of Messrs. Scott and Herbert Williams, the architects, display a considerable amount of invention as well as skill.

The pulpit is hexagonal in form, and will stand on a dwarf column of Portland stone, with the hand-rail supported by ornamental brass-work. On the angles are twisted pillars: each pillar has twelve hollows filled with various designs, and they support a cornice filled in with branches of the hawthorn. The light elegance of this foliage is remarkable. The panels have each a different diaper pattern, with boldly carved symbols of the four Evangelists in roundels.

The reading-desk is raised one step from the floor: it has two double arches and ten pilasters. The centre pillars are round, resting on square bases. On each of the angles are heads of the dragon, in reference to the prowess of the patron

saint. The perforated friezes in the screens behind the choir-seats in the chancel are of foliated scroll-work, interspersed with sacred fruits and emblematical flowers — such as the passion-flower, trefoil, pomegranate, lily, figs, and olives.

Sixteen panels have been carved for the chancel-gates; one-half taken from the Old Testament and the other half from the New. The former consist of Moses in the Bulrushes; the Tablets of the Law, with the sword of Justice; the Star of Bethlehem; the Gospel of Peace, over which is a dove; the Brazen Serpent in the Wilderness; the Seven Golden Candlesticks; emblems of the Sacrament (wheat and grapes); chalice and paten. The subjects from the New Testament are,—Solomon's Glory, represented by three crowns rising out of three full-blown lilies; the Crown of Victory; emblems of the passion-flower; the Resurrection, emblematized by a butterfly issuing from a chrysalis; Light out of Darkness, the Snowdrop; Faith, Hope, and Charity; the Trinity in Unity.

Throughout the whole of these works the freedom, yet crisp sharpness, of the foliage, and the ingenuity of its application, deserve much praise. The first seat south of the chancel is a representation of the Agony in the Garden. The cup is enclosed in foliage at the top, and at the back is a branch of olives copied from one gathered by E. T. Rogers, vice-consul of Caiffa, Palestine, in the garden of Gethsemane: around the outer edge of this bench-end are the words, "Not my will, but Thine be done." Other inscriptions of a similar description are used in parts.

The fronts and backs of the seats have a double row of variously enriched panelling, 180 in number, the upper row being alternately relieved by sprigs or branches of sacred flowers bound with labels, and having suitable inscriptions in raised letters, such as "In the midst of judgment He remembers mercy;" "Look upon the rainbow, and praise Him," &c. &c.

At the chancel end of the centre aisle there are seven seats set apart for special purposes. On the right is the royal pew, with an enriched double shield surmounted by the crown, V.R. and the motto "*Dieu et mon droit.*" On the inside is carved, in very bold letters, her Majesty's monogram, Victoria, in the form of a Greek cross, enclosed in foliage and flowers, the rose, thistle, and shamrock—the monogram suggested by the one in the Charlemagne Bible of the ninth century, now in the British Museum, and cunningly devised; the diocesan pew, with ecclesiastical shield with croziers, mitre, and the crossed swords representing the martyrdom of St. Paul; the corporation pew, with the City arms and representation of St. George, &c.; the pew of the Worshipful Company of Drapers, with enriched shield, date, and motto of the company, "Unto God only be honour and glory," surmounted by the triple crown issuing from clouds, with rays of light: on the inside, a triple branch of lilies, the emblem of the Virgin, the patroness of the company, the shield of Fitzalwin, the first mayor of London, and other devices, attract attention. On the pew of the Merchant Tailors' Company is the shield, &c. of the company, and in one part is introduced an illustration of a text from St. Augustine's 19th chapter of St. John,—"God is all to thee: if thou be hungry, He is bread: if thou be thirsty, He is water: if in darkness, He is light; and, if naked, He is a robe of immortality." In this instance Mr. Rogers has figured the star of light, the bread, chalice, and the robe, in a manner which describes the text. We must pass over with brief notice the ornamentation of pews of the Clothworkers' Company, and the rector's pew: on the former the teasel is conspicuous, and on the latter the monogram of the Rev. T. W. Wrench, surmounted by a branch of olives.

All the bench-ends in this aisle have a shield, which will be emblazoned on the outside, enclosed by Greek foliage: on the inside there are various fruits and flowers, such as the gourd of Jonah, Syrian dates, nut fruit, oak and acorns, chesnuts, wheat ears, mulberry, pine fruit, the Rose of Sharon, olives, figs, &c.

The carvings on the benches for the north aisle are well treated. Amongst them are a female figure of Charity, seated in an ecclesiastical chair, supported by pelicans: she is feeding and protecting three children. The idea, Mr. Rogers tells us, in a catalogue of these works which he has published, was taken from an early sculpture in Valterra marble. On other seats are the pelican in her piety; the fall of man represented by the serpent coiling round the forbidden tree. On the back is the lily of the valley. The sage plant of Palestine is combined with the primrose of England, the stork of the wilderness, &c.

There are about twenty benches belonging to the south aisle: on some of these are the sage-plant of the East (which is well adapted to sculptural purposes), combined with a branch of oak; the ivy and the anemone, and the common flowers of the East; clusters of pomegranates and bell-flowers, Aaron's rod, a triple branch of lily rising out of a bulbous root, which is given in the form of a heart. We must not omit to mention the device of a Latin cross, on which is suspended the passion-flower, the leaves and tendrils of which are creeping over and binding it to the cross; the carving of the scape-goat wandering in the wilderness, with the mark of the High Priest on his forehead: in the background is forked lightning, indicating the wrath of God. On the back of this standard is a crown of thorns,—"On Him was laid the iniquity of us all."

In the designing of these numerous carvings Mr. Rogers has been assisted by his son, Mr. W. H. Rogers. The list we have given will show that mental power has been employed as well as skilled hand-work.

VENTILATION AND WARMING OF HOSPITALS, &c.

THE VAN HECKE SYSTEM.

GREAT attention is still being given to the improvement of hospital ventilation in France. The latest system there introduced, and which is conceived to be better than even those previously reported favourably on, as in use at some of the public hospitals, is the system of Dr. Van Hecke, which appears to have been previously brought into operation at Brussels for the Belgian Government. Of the application of Van Hecke's plan to one of the pavilions of the Hospital Beaujon, and a highly favourable report by a Government commission on the subject, we had some time since heard, and were favoured, by Mr. J. Bonomi, with a special translation of an elaborate paper by the reporter on that commission, Dr. Grassi, who had instituted an experimental investigation of the system for his own satisfaction, after the commission of which he was the reporter had favourably reported on it to the French Government. Of this translation we propose now making some use; the more especially as we find that Van Hecke's mode of ventilation continues to be preferred to all others in new French hospitals, to which it has since been applied.*

Dr. Grassi, in the outset of his Dissertation, after some allusion to the modes of ventilation and warming long in use at the Hospitals Neckar and Beaujon, and to the commission appointed to examine the new system of Dr. Van Hecke which had been tried in the Pavilion No. 4 of the Hospital Beaujon, thus proceeds to describe that system:—

"The warming of the Pavilion No. 4 of the Hospital Beaujon is performed by means of a calorifère-stove situated in the cellar-floor. Air is conveyed to this stove by a cylindrical channel of zinc, 75 centimètres (2 ft. 5½ in.) in diameter, which, after running horizontally through the vault, is received into a vertical shaft of masonry opening out in the garden at about 2 mètres (about 6 ft. 7 in.) above its surface: from this source the air is derived.

After the air has passed through the tubes of the calorifère and become warmed, it enters a large pipe, to be distributed by it in the three wards (one above another): before, however, reaching them, it passes over a pan of water to supply it with a suitable quantity of moisture. By this arrangement the air transmitted to the wards is derived exclusively from the garden, and not allowed to mix with the air of the vault.

Instead of permitting the air to circulate in the calorifère it may be sent to the wards in a direct course, which bears the same relation to the channel of the calorifère that the chord does to its arc. At the commencement of the calorifère tube there is a movable register for the purpose of giving such a direction to the air as may be required, either for warming it, or allowing its use at its natural temperature. The register, when partly opened, may even permit a mixture of the two at different degrees of temperature, and moderate the warmth of a ward for the moment become overheated.

The air conduit (or pipe) enters the ground-floor ward in its centre at the floor level, through the middle of a cast-iron drum of four vertical sides, furnished with perforated doors for admitting the air into the ward. The tambour or drum incloses some wire shelves, on which linen may be placed, and drinks for the patients to be warmed.

The air-pipe debouches on the floor-level through an opening of 75 centimètres (2 feet 5½ in.) diameter, in which is inserted a vertical tube of 60 centimètres (1 ft. 11½ in.) diameter, rising to the first floor: between these two tubes there exists an annular space, permitting a portion of the air to be arrested on the ground-floor. Thus the air introduced is divided into two portions; one admitted to the ground-floor, the other continuing upwards for the use of the upper floors. A register, regulated by a quadrant, permits the reduction of the section of the tube, and of varying the volume of air for each of the floors. If the register is entirely closed, the whole of the air would be arrested on the ground-floor: by opening it, more or less, the air for the two upper floors is increased at pleasure.

On the first floor there is an arrangement like that on the ground-floor,—a register for stopping a certain volume of air, and for allowing the rest to rise to the second floor, where the second column terminates, and a tambour only exists, in every respect resembling those of the lower floors. Thus fresh air, serving both for warming and ventilating, is admitted into the centre of the wards, entering through wide openings, so as not to acquire a great velocity and produce disagreeable currents.

The air which has been harboured (*séjourné*) in the wards escapes from them through four evacuating channels in their corners or angles,—a number too limited, in my opinion; but the pavilion being already built where the system of ventilation was adapted to it, a greater number would have occasioned a considerable outlay for cutting chaces in the walls, or for placing the channels on the wall surfaces with a very disagreeable appearance.

The three channels at each angle,* and which correspond with the three wards, rise side by side vertically to reach the loft, where they are received into a horizontal zinc pipe, one at each of the four corners, which unite in the centre of the loft in a tambour, capped with an evacuating cylinder of zinc, 75 centimètres (2 ft. 5½ in.) in diameter. At the intersections of the air-escape channels from the wards with the receiving channels of the loft, registers are fixed, by which the openings may be regulated, and, consequently, the draft or extraction from each of the wards.

The air from the wards has, besides the evacuating channels above named, an exit for escape through the water-closets by an opening in the ceiling, which also communicates with the channel in the loft. The air from the ward, entering into the water-closets through an opening in the lower part of the door, rises towards the evacuating opening in the water-closet ceiling, sweeping through and carrying away in its course all smell. The ventilation is not effected through the water-closet basins, as at La Riboisière, the seats being closed, and the ventilation acting exclusively upon the atmosphere within the water-closet: it is quite sufficient, and in no hospital have I found the water-closets so completely rid of smell as in the Hospital Beaujon.

By way of concluding what refers to the introduction and exit of air, I must mention a source of pure air considered as accessory, which, however, is not unimportant.

On the ground-floor at the entrance to the cellaring, is placed a small steam-engine, of which I shall presently speak. The smoke-flue from its furnace, united to that from the calorifère-stove, is surrounded by a concentric inclosure, the lower end of which is open to the outer pure air, and draws it in through its orifice in the garden. This air circulates in the annular space round the smoke-pipe, in contact with which it becomes warm as it rises to the top of the building. This air-flue is situated in the thickness of the wall separating the staircase from the wards: at the level of each story it presents three openings, one into the ward, one towards the stairs, and the third into the two-bedded room.

These openings afford a passage for the warm air during winter: in the summer season it is allowed to rise to the upper part of the building, where it disperses itself; but Mr. Van Hecke was desirous to turn this warm air to account, by

* A pamphlet titled "Remarks on Ventilation, with Extracts from Official Reports, on the Combination of Ventilation and Warming;—System Van Hecke. By Wilson Weatherby Phipson, C.E." (printed by H. M. Pollett, 35, Aldermanbury), has recently been forwarded to us, which contains many allusions to the favourable results obtained by means of Dr. Van Hecke's system, but no particular description of the plan itself.

* It seems needful to add here, "of the upper ward."
TRANS.

causing it to enter the loft used as a drying-chamber.

When the upper orifice of this air-funnel is closed, as is the case in winter, the warm air diffuses itself in the wards, and in the staircase, of which it keeps up the warmth. In summer, when the upper orifice is entirely open, the smoke-flue draws up the air within the wards, and thus produces an increase of ventilation.

Such is the channel-system for the passage of the air derived from the garden, and finally escaping through the common flue. Now let us consider the moving power.

I have before mentioned the small steam-engine at the entrance to the cellaring: it is intended to keep in motion a ventilator, which, in the first instance, Mr. Van Hecke had placed in the upper part of the tubing within the flue or chimney of the loft. A band or strap transmits the movement from the ground-floor to the loft: the ventilator then produces a suction-draft from the air of the wards. The apparatus of Mr. Van Hecke produced ventilation by (*appel*) suction by mechanical agency. Since it was fixed, an important addition has been made to it. Mr. Van Hecke has placed a second ventilator, identical with the first, in the lower indraught channel, where the column of air takes its rise within the vault. On connecting this ventilator with the machine, it drives into the wards the air which it inspires from without, and thus produces a ventilation by injection analogous to that produced by the apparatus of Messrs. Thomas and Laurens, at the Hospital La Riboisière.

In this manner the apparatus is arranged to allow of ventilation by suction, on putting the upper ventilator in motion, or by injection when the engine is in connection with the ventilator situated in the lower part of the building; the change being effected simply by the band which transmits the motion, an operation requiring but a few minutes.

The ventilator of Mr. Van Hecke is composed of two (*palettes*) fans or blades, fixed to two stems, which are inserted perpendicularly on the axis of rotation, and inclined from fifty to sixty degrees. A peculiarity distinguishing this ventilator is, that the inclination of the fans is not constant, but varying with the speed of the rotary movement.

The boiler of the engine warms the office on the ground-floor, in which are arranged pans for poultices, and a warm-linen closet. A portion of the steam, after giving motion to the engine, is sent to the upper floors, where it heats the water required by the patients; but the greater portion, which might be usefully employed, is for the present wasted.

Dr. Grassi then proceeds to show how the effects of the system are indicated by anemometer, connected with a contrivance of M. Van Hecke's. He then adds:—

"In order to complete the description of this system of warming and ventilating, I have to notice an apparatus not yet fixed, but which is now being constructed by M. Van Hecke, and to be placed within the stone-built channel, which from the cellar leads into the garden for air. This apparatus is intended to cool the air in summer, on its way to the wards. It consists of two cylinders placed horizontally one above the other, at 1m.50s. (4ft.11¼in.) apart. On the axis of the upper cylinder is a pulley to receive the movement of the axletree. The under cylinder is plunged into a trough of water, which may be obtained of the temperature of well-water, or be cooled artificially by pieces of ice, should it be requisite. Endless bands pass from one to the other of these cylinders, which revolve simultaneously. The air circulating in the channel is forced to pass over these constantly moist bands, and thus acquires a much lower temperature."

An elaborate series of experiments are then described, and the result of the whole inquiry is summed up in his

Conclusion.

"The apparatus established by Dr. Van Hecke, in the Pavilion No. 4 of the Beaujon hospital, fulfils perfectly the conditions imposed by the note of instruction.

1. It is capable of maintaining the temperature of the wards at 16 degrees ($60\frac{8}{5}$ deg. Far.).

2. When acting without strain in an even, regular manner, his engine can supply 60 cube mètres of air for each patient per hour. The various parts of the apparatus are so arranged as to graduate the results which it is wished to produce, to measure them exactly, and to ventilate at will by suction or by injection.

3. The experiments detailed in this account have proved that ventilation by injection is to be preferred.

4. When it acts by suction, the apparatus of Mr. Van Hecke is also preferable to others that are known to us, because it is established on better conditions; and, as a consequence, the volume of air admitted accidentally through the door and window joints (not producing any useful effect) is considerably lessened.

The sisters of the Beaujon hospital, who go into the wards at all times, agree in saying that the pavilion of Mr. Van Hecke is the best ventilated of the establishment. I have myself observed it also during the prolonged visits I was obliged to make at the Hospital Beaujon. The water-closets are particularly remarkable for the complete absence of all smell. This fact it is the more important to note, as I have never met with such perfect disinfection.

5. In its actual conditions of installation, with the entire waste of the steam, this system reduces the cost of ventilation to 2½ centimes per day for each patient.

6. The warming and ventilation combined are not more expensive than the warming alone of the Pavilion No. 3 adjoining it, and not differing as to conditions.

7. In turning to account, as it would be easy to do, the waste steam, for the purpose of heating the bath water or the water for the pharmacy, this apparatus would effect a considerable economy in the expenses of these two departments.

I am thus brought, with reference to this system of warming and ventilating, to the general conclusion which I stated on closing my account of the apparatus at the Riboisière hospital. Ventilation by injection, produced mechanically, should always be preferred to ventilation by suction, and particularly in cases where there is the opportunity of turning to account, for various warming processes, the steam that has served to give motion to the engine, and this may always be done in hospitals."

The use of steam-power, we may add, is only requisite to Van Hecke's system on a large scale. In ships and elsewhere, where manual labour can be easily or economically applied, or is sufficient for the purpose in view, no steam-power is necessary to ventilation on this plan; and in dwelling-houses the ventilator has even been put in action by clockwork and weights. A French admiralty report speaks favourably of the system as applied on shipboard, where one man works it at a time. French government reports speak strongly in its favour, as adopted at the Hospital Necker, for ventilation, heating, and cooling. The Hospital L'Asile Imperiale de Vesinet, near Paris, has had Van Hecke's apparatus applied to it, and it has been brought into use in other hospitals and public buildings in France and elsewhere, and is ordered for hospitals now in course of erection at Chartres, Lyons, &c.

SIR,—Your articles on "Hospital Construction" will be productive of great good to those most in need,—the poor and the sick,—by calling the attention of all classes to a great want in England, viz. a of sound knowledge of the best modes of affording the relief which the charitable and wealthy are disposed to accord to them.

To the poor man his health is his sole wealth. Accident or disease befalls him, his family pine in penury, and he becomes the inmate of a hospital. Until public attention became roused by the terrible evidence produced before the commission on the sanitary condition of the army, the hospitals for his reception were (and with few exceptions still are) "dark, unventilated spaces"—(see the Right Hon. Sidney Herbert's paper in the *Westminster Review* of January, 1859,)—wherein, with all the care of medical science, it was a hard matter for nature to triumph over disease.

In the "Blue Book" upon that commission the hospital Lariboisière, in Paris, was frequently brought forward as a specimen of what an hospital should be. You have rendered to the public a real service in giving a plan of it in your admirable journal.

But there is progress in this age, and in the matter of hospitals progress has been striding in France.

The French Government, *L'Assistance Publique*, has improved upon the Hospital Lariboisière in one most important matter, that of ventilation. In their two hospitals erected since the completion of Lariboisière, the hospital Necker and L'Asile Impériale de Vesciret (in my opinion the most perfect hospital now existing), the system of ventilation discovered by Dr. Van Hecke is adopted, superior in effect, and far more economical in cost, than those of Monsieur Duvoir and of Messrs. Thomas and Laurens, and employed at Lariboisière.

Subjoined is a table of the cost and maintenance of the different systems, as given by the Government commission.

Cost.

Hospital Necker; system, Van Hecke	236fr.
Hospital Lariboisière; system, Duvoir	480
Hospital Lariboisière; system, Thomas and Laurens	808

Maintenance.

Hospital Necker; system, Van Hecke, 3,325 cubic feet per hour	25fr.	27c.
Hospital Lariboisière; system, Duvoir, 1,050 cubic feet per hour	54	30
Hospital Lariboisière; system, Thomas and Co. 3,150 cubic feet per hour	101	18 P.

CONCRETE BUILDING.

BÉTONS AGGLOMÉRÉS.

AT a recent meeting of the Institution of Civil Engineers of France, a paper was read by M. Coignet, "On the use of Agglomerated Concrete," having a base of lime, and moulded into the wall itself, forming mason-work in a monolithic state of any description, of whatever object, form, capacity, or mass, and without regard to the place where it be laid, whether above or below the surface of the ground.

In this paper, as reported in the *Engineer*, M. Coignet gave an account of the applications he had made of this kind of construction, and the results he had obtained. He said,—

The question of the resistance to weather, that which chiefly concerns the *bétons*, with a base of lime, has remained without practical solution until now; and, furthermore, these *bétons* cast in moulds had a considerable shrinkage, which materially compromised the stability of such structures. In consequence of numerous failures, the attempts to employ *bétons* with a base of lime as a material for the erection of structures above the surface of the ground, and exposed to the weather, have been generally abandoned, and attention has been confined to the use of cements, of which the apparent durability and the rapid set have given more satisfactory results. Even with these, inconveniences have been so multiplied that at last builders have abandoned the use, in the open air, of *bétons* of cements, just as they had abandoned those having a base of lime.

For several years, my practice has had for its object to prove that *bétons*, with a base of lime, and lime too of a most ordinary quality, could be compounded, prepared, and used in a manner to produce a masonry much more economical than any other, and capable of resisting, in the open air, all causes of destruction. This result has been at length completely attained.

Until now, and without exception, the *bétons* have been moulded and not agglomerated; they have been always employed in the state of a soft paste, a pulp more or less liquid, hardening finally in the mould or upon the ground by the simple "set" (*prise moléculaire*) of the lime. In this state of soft paste, the *bétons* with a base of lime or of cement, contain an excess of water, which separates the particles of the lime and diminishes the rapidity of its set.

But this excess of water is physically opposed to agglomeration. If, for instance, we endeavour to solidify the ordinary *bétons* by stamping, that which is too soft slips under the shock of the hammer; it will not bind; and soon the water which is in excess separates from the *béton*, filling the empty spaces, and floating upon the surface, in such manner that the hammer acts only on a liquid incompressible mass, and whereby masonry thus composed becomes, when the water has evaporated, a light, porous, spongy, absorbent, and friable substance, inasmuch as the presence of an excess of water, by its evaporation, leaves innumerable pores, giving easy access to all the elements of destruction.

It is in vain that the constructor seeks for materials of the best quality: it is in vain that he increases the quantity of lime employed; in vain his recourse to chemical science: the result is always the same. All *béton* moulded and exposed to the air is a spongy and friable stuff, doomed to early destruction.

But if, instead of moulding the *bétons*, we obtain them in a state of pulverulent paste, so firm that they shall not elude the shock of the hammer, then, by the agglomeration effected by the repeated blows of a hard and heavy body, the particles of the *béton* become bound and settled so as to occupy a considerably less volume, the particles of the lime are brought in contact, the set is more rapid and intense, and, in short, we have a *béton* heavy, compact, dense, and impermeable, and capable, in a short time, of resisting all weathers, even to the severest frosts. This result is the more important, inasmuch as there is attained at the same time a considerable economy; for, in order to render agglomeration possible, it is necessary to reduce the quantity of lime to a strict minimum: the presence of lime in excess gives to the *béton* a mobility, a viscidity, whereby it slips under the hammer and its agglomeration is prevented.

The effect of agglomeration is such, that with such limes as, by the ordinary processes, give a *béton* of only tolerable quality, requiring, before taking a passable set, weeks and even months, I obtain by the fact of agglomeration a *béton* as hard as good stone, and this in a few days, and often in a few hours. Indeed, in case of necessity,

and when the season is unfavourable, I can at will produce masonry of this kind which shall in twenty-four hours be hard and strong enough to brave the severest frosts. I have made this year some most conclusive experiments upon this point.

After this explanation of the theory which has guided my practice, I will state the practical applications which I have successfully made of this mode of building.

It is now two years since I mentioned before the members of this Institution the house of the station-master at Suresnes, on the Versailles Railway. I had been ordered to build that house by M. E. Flachat, your eminent colleague, who, from the first, recognised the justice of the theory of agglomeration as applied to the composition of *bétons* with a base of lime, and who has experimented with them upon an extensive scale. This house, constructed entirely of agglomerated *béton*, is a complete monolith from the summit to the foundations: cellars, vaults, slabs, walls, floors, roof (in form of a dome), cornices, ornaments, all are in agglomerated *béton*, without joints of any other material. The exterior has all the appearance of rough stone. Without shelter of any kind, it has withstood all weathers for four years, without showing any symptoms of deterioration. This house is the first of its kind which has been made, and it merits, therefore, the careful attention of men of art.

During the last two years I have constructed a great number of slabs and sidewalks, having a durability very much superior to that of asphalte. I have made cisterns also; and, among dwellings, one at St. Denis, Route des Poissonniers—a house similar to that at Suresnes, that is to say, with floors and dome in *béton*, but of larger dimensions. The dome which covers the house at St. Denis is 14 mètres in length by 8 mètres in width. The thickness of its sides is 0m. 40 at the bottom by 0m. 25 at the crown. It has withstood three winters without any deterioration.

I have followed with equal care the application of agglomerated *bétons* to the construction of terraced roofs, with which I have at length obtained the most complete and decisive success. I have this year constructed a terraced roof of 0m. 30 (12 inches) thickness, and covering a building 22 mètres (72 feet) long by 15 mètres (49 feet) wide, being a total surface of 330 square mètres. This roof, this slab of 330 mètres, is supported in its middle only by a single wall, which divides it longitudinally, so that each half of the slab has a part, 22 mètres by 7 mètres, without bearing points and without vaults, its surface being horizontal above and below. The roof has become thoroughly dry in the open air.

Following an examination, the emperor conceived the idea of the application of this *béton* to seawalls. Means have been placed at my disposal, and trials have been made at Saint Jean-de-Luz, the success of which can be determined only by time.

M. Coignet explained that the process was the result of a series of manual operations (*tours de main*), for which some experience was required, and their success depended upon the pulverulent state of the materials, their previous intimate mixture in exact proportions, using a very moderate quantity of water; and, above all, upon light and repeated blows acting successively upon small portions as they were brought together into the mass.

FRANCE.

THE fountain of the Place Louvois, which was taken down some time ago, has been covered with a copper coating by the galvanoplastic process, which was tried with such success on the fountains of the Champs Elysées last year, also for the decorations of the pontifical railway carriage (see *Builder*, p. 814). This graceful monument is one of the best works of the late Visconti.

The church of St. Eugène has been lately purchased by the town of Paris, by a contract entered into at the end of last April, which declares that the Abbé Fuseaux and M. Coquand, curate of St. Eugène, have sold to the municipal authorities the following items:—1. The edifice, occupying a superficies of about 1,400 mètres 13 centimètres; the sacristies; the chapel of catechism; the woodwork and presses, and all fixtures on the premises. 2. All objects of furniture, of whatever description, at present in the said church. The price fixed upon is 1,200,000 francs.

A curious trial took place last month about the gas-supply in the well-known Mabille Gardens. In that establishment for balls and *fêtes* there are numerous tenants, exercising games of all sorts; and one of these, M. Trachitzky, applied to magistrates for redress under the following circumstances:—The contractor for the supply of gas was in the habit of using a quantity of "benzine"—the well-known very volatile preparation from gas tar—in order to (as he says) increase its brilliancy; but M. T. applied to prove, that instead of the gas burning brighter, the reverse was the case, so much so that all his sporting customers had deserted his tables, evidently not bent upon staking their money in the dark. M. Vaudoré, the inventor of the improved process, attended, and offered to repair the fittings. M. Potier pleaded for M. Mabille, and urged his right to the surveillance of the system and its modifications. The president accepted both offers, and the proceedings terminated.

The works of constructing the abutment of the new Pont au Change, on the right bank of the Seine, advance rapidly, as also the rebuilding of the Quai de l'Horloge, between the Marché des Fleurs and the Rue d'Harlay. In order to facilitate the clearing away of the mass of stones round the piers of the old bridge, which has been interrupted for the last few days by floods in the river, an immense dam has been thrown into the current obliquely, so as to direct the force of the floods to the middle. As soon as the water lowers, the rest of the piers will soon disappear.

Vast improvements are taking place at the watering-place of Plombières. The new establishment of baths, commenced last year, is so far advanced, that one can judge of the magnificent accommodation it will afford. It is situated at the entrance of a vast park extending between two mountains, along the road from Plombières to Vesoul. The French emperor is determined to render it as charming as possible. A new church has been built, and excellent roads are carried over the picturesque mountains of Vosges. When the plans, as proposed by his Majesty, are fully carried out, Plombières will be as agreeable to its visitors as it is now beneficial in a sanitary point of view.

A bronze statue of the Emperor Napoleon I. has just been inaugurated at Brienne, the work of M. Louis Rochet. He is represented as an "Enfant de Brienne" (as he used to style himself), leaving the *école* on the examination day. One hand is placed on his breast in the graceful attitude of a young student, receiving his honours; and the other holds a volume of Plutarch's Lives, which formed his favourite study.

The organisation of the Chalons Camp proceeds rapidly. It is said that Marshal Pelissier (Duc de Malakhoff) has prohibited the transport of troops by railway to the camp.

The tribunal of commerce of Avignon has resolved to offer a premium of 5,000 francs on the 1st October next for the best memorial which will indicate in a secure and easy manner the means of detecting, in red dye (*garance*) and in different products from which it is obtained, every class of adulteration or fraudulent mixture.

At Havre, the magnificent summer palace of iron, built by the firm of Cennovière, of Havre, for the Viceroy of Egypt, has been just shipped on board the "*Ricardo el Negro*." The structure weighs from 700 to 800 tons, and figured in the Paris Universal Exhibition of 1855.

Horace Vernet has set out for the seat of war in Italy, and in order to have a correct depiction of the Battle of Montebello has proceeded to the battle-field to sketch the ground on which he will group the various incidents of the fight.

THE ORGAN AT ALL SAINTS', MARGARET-STREET.

THIS organ is a divided, or more properly, a double one, equal portions being placed in the north and south chancel aisles. Although divided organs are by no means uncommon in modern churches, where the plan is often resorted to, to preserve a view of a west window, the disposition of the above instrument possesses novel features which it may be worth while describing. The object aimed at was the construction of an organ more particularly adapted to the requirements of "antiphonal" singing, or the alternate response of the choirs in chanting, &c.; an ancient usage of the church. The custom, although always prevalent in cathedral choirs, has rarely been carried out in its integrity, owing to the difficulty experienced by the congregation in following the responsive order as led by the choirs. In order to meet this difficulty, it was suggested by the Rev. T. Helmore, of her Majesty's Chapel Royal, to the builders, that instead of placing the organ on one side of the choir, it should be divided into separate parts, each part being, in point of fact, a separate organ; but both assimilating in power, though diverse in quality of tone.

By the separation of the two organs, it is believed that no difficulty will be experienced by those in the body of the church from at once following the lead of the sound as it proceeds from the alternate sides of the church.

From experiments already tried, it is stated that though each organ has its individuality of tone, *when combined* the effect is one of perfect unity, so that it is not possible for an auditor in the body of the church to detect any disruption of the volume of sound.

To effect the arrangement was, however, attended with difficulties of no slight nature. The unprecedented distance of the organs apart necessitated a great amount of horizontal action with its accompanying friction and inertia. This was, however, overcome by the use of a plan of suspending the trackers, and the use of the pneumatic lever, so that the south organ, though played on the north side, at a distance requiring 80 feet of vertical and horizontal action to a note, answers as promptly to the touch of the organist as that of the organ immediately behind him. Upwards of two miles of tracker are consumed in the action of the south organ, most of which traverses the vaults under the chancel, which receive, also, the wind trunks and stop action connecting that organ with the manuals. The pneumatic principle has been adopted also for drawing the stops of the latter organ, the great distance and consequent weight of the rods rendering the ordinary plan impracticable.

The "great" and "choir" organs are placed on the north side, and the "swell" and a second "choir" on the south. There is also a pedal 16-feet stop on either side.

The bellows are distributed within both organs; the feeders, however, being placed entirely on the south side.

The metal of the pipes contains equal portions of tin and lead.

All the stops extend throughout the manuals.

The following is the list of stops:—

NORTH ORGAN.

Third Manual (Great Organ).

1	Double Diapason	16 feet.
2	Open Diapason	8
3	Stopped Diapason	8
4	Octave	4
5	Wald Flute	4
6	Twelfth	3
7	Fifteenth	2
8	Full Mixture	3 ranks.
9	Posaune	8 feet.

Second Manual (Choir Organ).

1	Gamba	8 feet.
2	Stopped Diapason	8
3	Octave	4
4	Nason Flute	4
5	Vox Humana	8

Pedal C C C to F.

1	Sub Bass	16 feet.

SOUTH ORGAN.

Fourth Manual (Swell Organ).

1	Bourdon	16 feet.
2	Open Diapason	8
3	Stopped Diapason	8
4	Octave	4
5	Twelfth	3
6	Fifteenth	2
7	Mixture	2 ranks.
8	Cornopean	8
9	Oboe	8

First Manual (Choir Organ).

1	Dulcian	8 feet.
2	Stopped Diapason	8
3	Octave	4
4	Shake Flute	4
5	Cormorne	8

Pedal C C C to F.

1	Open Metal	16 feet.

Couplers.

1 North to South Choir.
2 Swell to Great.
3 Great to Pedal.
4 Swell to Pedal.
5 North Choir to Pedal.
6 South Choir to Pedal.
5 Composition Pedals.

The organ was built by Mr. Hill, of Euston-road.

PORTABLE SAW MILL.—There has been for some time past a mill of the above description in active operation in the woods adjoining Ballinshoe. The mill is driven by a portable steam engine, of about eight-horse power, and nothing can equal the steadiness and ease with which it performs its duty—cutting up timber of a considerable thickness in a perfect manner and with great rapidity. The engine is made by Messrs. Clayton, Shuttleworth, and Co. of the Stamp End Ironworks, Lincoln; and the mill by Messrs. Young, Ballinshoe, Kirriemuir.

THE HANDEL FESTIVAL AT THE CRYSTAL PALACE.

WE spoke of the recent festival at such length last week that we must now content ourselves with recording the complete and most extraordinary success of the closing oratorio, "Israel in Egypt," the performance of which will not soon be forgotten by those who heard and *saw* it. It is supposed that the receipts will amount to nearly 30,000*l*. Allowing 15,000*l*. (a very large sum) for expenditure, there remains a surplus of the same amount, which, in accordance with the agreement entered into by the two bodies, 1856, will give to the Crystal Palace Company a net profit of about 10,000*l*. besides the value of the orchestra and fittings; and to the Sacred Harmonic Society the sum of 5,000*l*. in addition to the large stock of books of the music, &c. provided for the purposes of the Festival. To this is to be added the sum of 2,000*l*. to be equally divided between the Company and the Society, reserved as a guarantee fund from the Festival of 1857.

It will have been noticed that, although the decorations of the orchestra and velarium were not carried out to the extent we spoke of as probable at one time, the decoration of the organ and of the upper part of the orchestra, under the velarium, had a good effect; and we are glad to mention, in connection with these, the name of Mr. Thomas Hayes, the superintendent of the "Fine Art Department" of the Crystal Palace, by whom the work was designed and carried out. Let us add, that Mr. Alfred Novello* has published, in one volume, the whole of the music performed at this festival, in vocal score, with a separate accompaniment for the pianoforte, by Vincent Novello. It is well done, and very cheap.

THE INSTITUTIONS AND ADVANCE OF THE COUNTRY.

SOCIETY OF ARTS' DINNER.

AT the annual dinner of the Society of Arts, held on Tuesday last, Lord Napier made a very excellent speech in proposing the main toast. In the course of it he said,—Allied with the Government of England, or sanctioned by our laws, you find many institutions of a corporate character, which, though not designed for the encouragement of arts, must yet, in an intelligent and critical age, by their opulence and associations, become powerful vehicles in fostering the principles of good taste. The Church of England has been a main instrument in the correct and discriminating revival of the Mediæval styles. The Universities in repairing and enlarging their venerable establishments must have greatly contributed to the same result. Every cathedral should be a seminary for musical, architectural, and sculptural training, and we have seen at Canterbury, Norwich, Ely, and elsewhere, how Chapters even may become profitable guardians and stewards of the structures and revenues committed to their charge. The Temple and Lincoln's Inn illustrate the munificence and ability of the legal bodies, while many buildings belonging to banks, municipalities, and railways, prove by their beauty how far our citizens and commercial companies are removed from a sordid economy, and afford a proper theatre for the introduction of new materials and forms, as well as for mechanical adaptations of an ingenious and unprecedented character. Next in order might be enumerated an array of Institutes, founded and supported for the direct promotion of the sciences, the arts, and manufacturing industry. Foremost in antiquity and glory stand the Royal Society, the Royal Academy, the Arundel Society, the Society of Antiquaries, the Art Union, the Institute of Civil Engineers, and a score of others, which have all their zealous adherents and proper spheres of activity, deserving the highest commendation for the value of their inquiries or the beauty of their records. The society which is assembled round this table may, without disparagement to others, assert peculiar and unexampled features of honour and utility. On the 105th anniversary of its existence it may reflect with pride on its long stability: it can claim as its president the first subject of the realm, by his august position, and second to none in earnestness and knowledge: many illustrious names and titles have been written on its rolls; but, while it is invested with the dignity of the past, it acts with the enthusiasm of the future: it has cast open its gates to the people, and become the central figure and the animating spirit of a great industrial confederacy numbering more than 300 members. Finally, gentlemen, it is certain that neither governments, nor corporations, nor societies can be profitable agents without a generous, responsive, and critical public. History shows how academies may go on preaching and prating amidst general sterility. There will not be intelligent producers without intelligent purchasers. But the industry of England is nourished from a thousand silent and spontaneous sources. Our treasures are not only laid up in museums, like grain in warehouses; they are also scattered in our homes, like good seed in pleasant and fruitful places. Many do not worship in the public temple who have built domestic altars to the arts. Consult those quiet habitations of the beautiful and good,—how many modest deeds and gentle voices attest the prevalence of a beneficent culture. Such multitudinous though insensible influences are ever conspiring with your disciplined efforts to diffuse a better education below, an education which shall regulate the strong intellect and exalt the quick invention, and fix the bewildered taste, and rear up in England a working class capable of ministering to refined delights,—capable, too, of labouring with consciousness and understanding, of sharing a divine satisfaction in beholding and approving their accomplished work.

* D'Arblay-street.

STATUES AND MONUMENTS.

SUCH an almost standing title as that of "Statues and Monuments," or "Monuments and Memorials," has now become, was, within the last year or two, much seldomer required than now to indicate the news of the week on this particular branch of art. As in the case of drinking fountains, a desire for statues and monuments appears to be becoming very general throughout the country, although not yet quite so prevalent as the desire for drinking-fountains has become.

A bronze statue of Lord Clive, the hero of Plassy, by Marochetti, has been placed temporarily in the Privy Gardens, Whitehall. It is not distinguished by any marked character, nor is the likeness thought to be very happy.

The Birmingham Society of Artists are taking the initiative in a movement for providing a monument in memory of the late Mr. David Cox, the artist. It is proposed to place the memorial in Harborne Church. A committee is about to adopt the necessary measures for carrying out the object in view.

The monument raised by public subscription as a memorial to the natives of Leeds who fell in the Crimean war, has been erected in the Leeds parish church. The monument is placed at the north-east entrance, in the place until recently occupied by the statue of the late Mr. M. T. Sadler, which has been removed to the opposite side. The monument consists of a pedestal, enclosing a panel of white statuary marble, with a Gothic canopy. Upon the pedestal is placed a sculptured group, consisting of two life-sized figures— a dying soldier with the angel of Victory placing upon his head a wreath. The rocky ground appears strewed with the wreck and spoil of war. The canopy over the tablet, on which is inscribed the names, consists of a groined and foliated series of trefoiled flying arches, the cusps of which have angels recording in open books the acts of the heroes. On the pilasters are inscribed the Crimean victories, entwined with laurel. The composition is surmounted by the standards of the 68th regiment. The height of the monument is 14 feet, and it has taken about 15 tons of material for its construction, and has been designed and executed by Messrs. Dennis Lee and Welsh, of Leeds. The cost is about 300 guineas, and about half the amount has yet to be obtained.

The designs for the Wallace monument are being exhibited to the public in the Golden Lion Hotel, Stirling. They are in number seventy-six, and exhibit great variety of taste, it is said, but very little originality of design. A good many of the artists, says an Edinburgh paper, have not hesitated in copying pretty plainly Scott's monument in Edinburgh, and the Wallace Tower in Ayr. There is a profusion of ornament and display of architectural decoration about most of the designs. The monument which is wanted, it adds, is one which will, by its plain, massive, but at the same time chaste design, strike the eye, and produce by its commanding appearance [on the Abbey Craig] an effect in the distance. One of the designs represents a colossal statue of the Scottish hero "drawing the sword against the Southrons." Another "looks more like an English Cathedral than anything else." A third represents the Scottish lion *couchant*, and is intended to be built of rough white quartz, as a colossus, with a spacious hall in the interior for relics, and a spiral staircase leading to the lion's mane. The height of the monument is fixed at 60 feet; length, 120 feet; cost, 5,000*l*. There are also obelisks and towers among the designs; but on the whole, says the *Scottish Press*, "the present exhibition, like the last, is a complete failure, and only proves to us what we were somewhat suspicious of before—how few real men of merit have entered the lists."

The Prussian Government is going to erect a monument on the battle-field of Rossbach. It is to consist of a colossal stone cube, surmounted by a cross, and with the Prussian Eagle in a niche. The sculptor is Herr Stirmer, of Berlin.

A St. Petersburg letter says:—The preparations for the inauguration of the monument to the memory of the Emperor Nicholas are being carried on with great activity; and, as to the monument itself, workmen are engaged night and day in order that it may be completed in time. The pedestal, which is of white marble, is completely finished. The bronze horse, which will bear the statue of the late emperor, has been removed from the foundry to the place of its destination. The ceremony remains fixed for the 7th of July.

A statue of the celebrated Pfeffel has just been erected at Colmar, on the Rhine, the work of Freiderich, and presented by him to that town in the most handsome manner. He has executed many important works, including the monument of Turenne, the statue of Wernherr, the gravedigger of Baden, &c. The statue is chiselled out of a block of the same rose-coloured stone of which the Strasbourg Cathedral is built.

Pfeffel, the poet, blind at twenty-two years of age, founded in 1773 at Colmar, in a small street which bears his name, the celebrated military academy, the nursery of many distinguished heroes, among whom we may cite the names of Lords Dalhousie and Elphinstone, the Titoffs of Moscow, Emmanuel, Orelli, Merian, Salis Saglio, Fellinberg, Bernoulli, &c. His poetic fables are as popular in Germany as La Fontaine's are in France.

ENGINEERING WORKS ABROAD.

THE junction line from the Vincennes railway to the Chemin de Fer de Ceinture consists of a quadrant or quarter circle, 197·70 long of 175 mètres radius, branching off at the right of the Paris and Vincennes line between the exterior Boulevart de Picpus and the Belt railway. This line crosses by a bridge the Rue Montempoivre, and joins the Belt line at the lane near the church, on the lands to the south of St. Maudé. Thus, the town and square of Vincennes will be put in immediate communication with all the railways which radiate from Paris to the extremities of the Empire, and to all the European Continent.

The inauguration of the line from Marseilles to Toulon took place on the 28th ult. Great crowds were present at both termini: the usual solemnities were gone through, and banquets of course wound up the affair. Owing to the line having been for some time exclusively used by the French Government for warlike purposes, in the transport of war materials, &c., this opening will be a boon to the shareholders who were obliged to suffer the transport of military stores and soldiers at reduced rates.

On the 28th ult. the excavations for the foundation of the first great abutment of the Rhine bridge, between Strasbourg and Kehl, attained the depth of 23 mètres. So far have they succeeded at the first trial of a perfectly new system. This success will create a revolution, it is said, in hydraulic works, and as soon as details arrive we will lay the process before our readers. Nothing remains to be done but to run the concrete into the iron cylinders, and to commence the masonry upon it. The blocks are of stone of the best description, hard granite, and trimmed with the first workmanship.

On the German side the railway works advance rapidly. The line, continued from the Kehl station to the German Custom-house, will cross two rivers, the Kinzig and the Schutter, which run parallel at a short distance from each other, and separated only by a dyke. The stone bridge across the Schutter is nearly finished: the parapets are in course of completion. It is described in the German papers as a solid and elegant construction. On the Kinzig there will be a very large bridge, necessitated less by the size of the river than by its caprices, it being a torrent which sometimes increases frightfully in a few hours. To bar its progress would be imprudent, so it has to be honoured with a noble bridge, which will afford ample passage for the angry floods as they hasten forward to hurl themselves into the old Rhine

bed. The bridge will be of three flat spans, two piers in the river, and two abutments. The girders alone remain to be placed.

The inauguration of the Seville and Cordova Railway, retarded since the 25th of May last, on account of some difficulties opposed to its progress by the local administration, took place, by order of the minister of public works, on the 2nd of June last. The service consists of two passenger-trains up and down each day, and one for goods.

The first days of the working of the Madrid and Saragossa line, on the first section from Madrid to Guadalaxara, have given results confirming the hopes expressed by the company. The products vary from 7,000 to 14,000 reals a day. The receipts augment certainly, as well, by the great number of travellers who, during the summer season, will visit the bathing establishments of Saudon and Teille, as by those who travel by Saragossa to various points of the kingdom from Madrid. The official inauguration took place on the 2nd of June: the ministers of Hacienda, of Gobernacion, and of Fomento, the civil governor, the Marquess de la Vega de Armijo, a great number of senators and deputies, the representatives of France, England, Naples, Sardinia, and many persons of literary distinction, were present. The guests filled three trains. At the Guadalaxa station all the engineers and *employés* were in attendance to witness the ceremony, which was short but imposing.

The Gazette of Madrid publishes the promulgation of a law authorizing the Government to create the necessary quantity of state "obligations," payable to the bearer, in order to cover the amount of the subventions granted, up to the present, to railway companies to whom concessions have been given; and it further advertises for tenders for the concession of the line from Albacete to Carthagena—a first-class line.

The Spanish Government has paid to the company a sum of 10,000,000 reals towards the subvention granted for the Madrid and Sarragossa Railway. This sum will be applied to the works of the portion comprised between Alcazar and Manzanares, the first section of the line from Alcazar to Ciudad-real.

ADVERTISING ARCHITECTS.

SIR,—As you have thought fit, in your last number to allude to an advertisement of mine, I beg to say that it simply proposed to adopt a course followed by me on a former occasion, in which case a party being about to alter his premises, I made a sketch showing the elevation of the old building, together with the proposed new frontage, which was subsequently carried out by myself in the usual way, to the satisfaction of the party making the alteration, who thereby materially improved his business. Such sketch I offer by my advertisement to supply for one guinea, which offer, with this explanation, will no longer, perhaps, appear derogatory to the profession or any one else. If, however, you can point out to me any more satisfactory mode of seeking compensation for twenty years or more spent in a profession almost entirely without remuneration, and without securing a present or future provision for my family or self, I shall be greatly indebted. I consider that I have a right and a duty to adopt any course fairly open to me to obtain business. Your concluding *Eheu!* might be better applied to the professors than the profession, the dignity of which has not been hitherto of much service, at all events, to myself. I have no objection to this letter being published.—S. P.

THE THAMES AND ITS NEIGHBOURHOOD.

DEODORIZING.

FROM inquiries we have recently made along the shores of the Thames, as far as Blackwall, Greenwich, and Deptford, we learn that, without doubt, the condition of the Thames has at times this year been even worse than it was during any part of the last. Landing at the steam-packet wharf close to Greenwich Hospital, and wandering thence near the Thames bank westward, past the gas-works to Deptford-creek, we learnt that, although the banks of the river in the neighbourhood of sewers throw off a most offensive smell, it is the body of the water of the Thames which causes the greatest reason for complaint. The watermen do not remember at the same season such a long continuance of east winds as we have had: this prevented the water from passing as it would otherwise have done to the sea. The small amount of rain by reducing the quantity of inland water had also an injurious effect, and a body of putrid liquid, which daily was becoming more and more intense, was kept floating between Woolwich and Chelsea.

Deptford-creek, the outlet of the river Ravensbourne, has gradually become of less bulk; and the want of a sufficient strength of backwater has caused an accumulation of mud which has almost choked the mouth of the stream. It is instructive to notice at low water the manner of the accumulation which is here to be seen: the dwindled river flows like a small line through the deep mass of filthy mud, until we come to that part where the struggle between the tide and the "back-water" takes place. Here is a raised ridge of materials which, except for artificial means, would, in a short time, as is the case with the rivers of the East, stop the passage. Into the Ravensbourne, from different directions, flow open ditches, which drain various neighbourhoods: into some of these runs the pestilent refuse of manure, and other unwholesome works, which are thickly planted near this once pleasant stream; and in such a condition has this river become that, when the tide is out, it is difficult to imagine anything worse than the effluvium which arises: this, together with open ditches, and other sanitary defects to which we will presently refer, fills the air with an extent of malaria which cannot be breathed with impunity. Crossing the iron-bridge, and bearing to the left hand, there is an open space towards the old church, on which are planted rows of houses, some of recent date, but others of nearly two centuries old. Elsewhere there is a large manufactory of manure and other matters, not pleasant. Let us, however, take the first of those clumps of dwellings which come to view. At the first house we found neither drainage nor water supply; and, standing with the back against this place, southward, is a row of small houses, with a cesspool in each garden, and without any provision for the carrying away of even the surface drainage. In most instances, a narrow channel formed in the soil carries the waste water of all kinds through the garden to the ground beyond. From each cesspool flows a black stream, which forms one of a larger extent, passing to a lower level, close to the house we have just mentioned, and then stagnating in a pool of the most poisonous refuse. Here pigs roam about without interruption. Near this picturesque accumulation of nuisances shown in our sketch, there is a school, in which there are generally upwards of 200 children in attendance. This school has been founded, and is in a great measure supported, by the owner of one of the neighbouring manufactories. So that out of a sanitary evil in this instance has arisen good; for the master of the school seems to be a man of perseverance, who appears to understand the manner of dealing with the people whom he wishes to benefit. He searches all around, and does not let the parents rest while there is a chance of getting the children to come to school. He rightly says, with the great bulk of the population here but little good is to be done: with the children it is different, for they can be worked into a better race. One of the chief difficulties is the migratory nature of those who dwell around. During a short time a very large number of children have entered the school, and have continued but a short time, when the parents, in order to be near to their work, remove elsewhere. The teacher of this school, looking towards the houses opposite, remarked that a drain had been passed under the road, but that it had not yet been made use of. In the continuation of this line the houses are of larger size, of brick, with old-fashioned doorways of about Queen Anne's days. Here the cesspools are placed close to the back-doors and close to the water-supply. Besides, the antiquity of these places makes them the more unhealthy, for it is the practice when the cesspools overflow to empty them and bury the contents, at little depth, in the gardens: of course the soil will, year after year, become more and more impregnated with poisonous materials. As regards the water-supply, there seems to have been a great improvement made since the last outbreak of cholera; nevertheless, fever is a well-known and fatal visitor here. How can it be otherwise when the people have no opportunity of dealing with their refuse than throwing it just outside to pollute the air which ventilates their dwellings? One spot here, which has been nearly dried up by the heat of the summer sun, is in wet weather a large pool, into which are collected various impurities. It is plain that the bad gases which have arisen here have been passed over the neighbourhood. Walking along the high street, towards Old King-street, the indications of the want of drainage is evident, and the common remark is, "We have no drains here, and yet we pay high enough for the support of them." Near Old King-street is New-street, where, at the time of the last attack of cholera, eighty-five cases occurred within a circuit of 150 yards. Nor is this to be wondered at: the place is more enclosed than that just mentioned, and the rooms are thickly inhabited. There is no drainage but into cesspools, and the people have no other means of disposing of their refuse water than to throw it into the street or into the yard behind. Here are underground kitchens or cellars, in which but a small quantity of light is admitted: these are fortunately not now inhabited; but require to be carefully seen after, for they become receptacles for filth. In this street the people made woful complaints of the smell, which they said was enough to poison them all. Undoubtedly the air is loaded with poison, and still there are those who would advocate the continuance of such a state of affairs. In other parts of this district the state is equally bad, and in the meadows the open ditches are in such a condition that it is difficult to give an idea of them. Some of these are close to Greenwich. In front of one row of houses, which have not long been built, is a large collection of putrid water, made worse by numerous dead dogs and other animals being mixed with it. Here little children were playing on the margin of the stagnant pool, from which the gases were rising all over the surface in large globules. Women and others were taking the air close by, as our second sketch shows!

There is a curious note in connection with the paving of this part of Deptford above the old-fashioned gateway near the Almshouses:—

"In consideration of 55*l.* which the corporation of Trinity House paid in 1693, for paving the whole length and breadth of the street fronting these almshouses, within and without the bars, the parish of Deptford obliged them, by an order dated the 16th of August, 1693, to indemnify the said corporation for ever from all further expense." Inside the gateway, in large Roman letters, is painted, "No beggars or dogs are admitted." This inscription is getting rather faint, and we trust it will not be renewed in the same words. The Trinity Almshouses consist of fifty-six houses, which are occupied by old captains of the Merchant Service.

The conservators of the Thames, in a recent report, direct attention to the enormous quantities of deleterious matter which are passed into the river through canals and sewers. It is certain that until this introduction of the most poisonous materials into Bow, Barking, Deptford, and other creeks, can be prevented, the interception by the main sewage will fail to purify the Thames. Along the banks of these streams are manufactories of chemicals, catgut, glue, artificial manure, the latter formed from putrid fish and other dangerous and most offensive matters: the gas-works, bone-boiling, and other works add to the evil. The foul state of the river, and apprehension for the public health, caused the conservators to prosecute the proprietors of several chemical and gas works for allowing certain refuse to be passed directly into the Thames. It was found, however, that the present state of the law prevented interference with those tributary streams which flowed into the river.

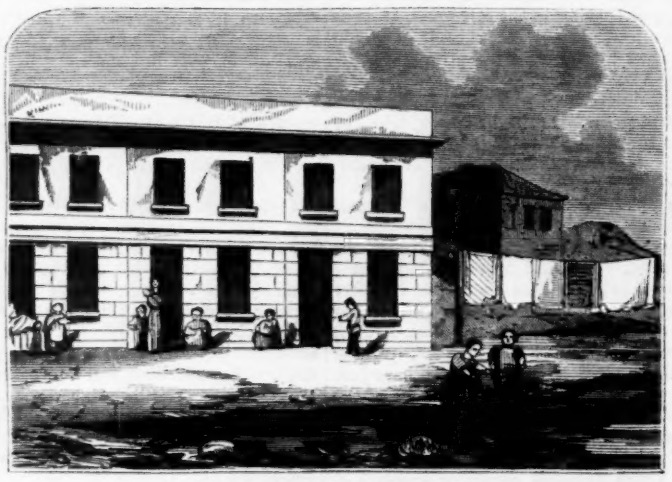
This subject, we admit, is beset with difficulties. A large amount of capital and important interests are at stake. In many instances, those manufacturing take up the most poisonous refuse of the metropolis, and convert it into valuable materials. As the population of London increases, and chemical knowledge extends, these unpleasant manufactories will multiply, and the streams on which they are placed will become more pestilential and dangerous than they are at present. While acknowledging the value of most of these works, and also considering the large sums which have been expended in their erection, it must be admitted that the care of health and human life is of the first importance, and that means should be devised to prevent this contamination of our waters by the placing of such works in improper positions.

In former times the "Laystalls," or spots for the reception of the refuse of London, were situated at Blackfriars, not far from where the gasworks now are; near Gray's-inn-lane, where a street still preserves the memory of the site by its name; and in some other neighbourhoods. These have been surrounded by buildings, and such receptacles driven from time to time to short distances away. From the banks of the Fleet, the boilings, slaughtering, &c. have been moved to Belle Island, and they must, before long, take a march to a farther distance.

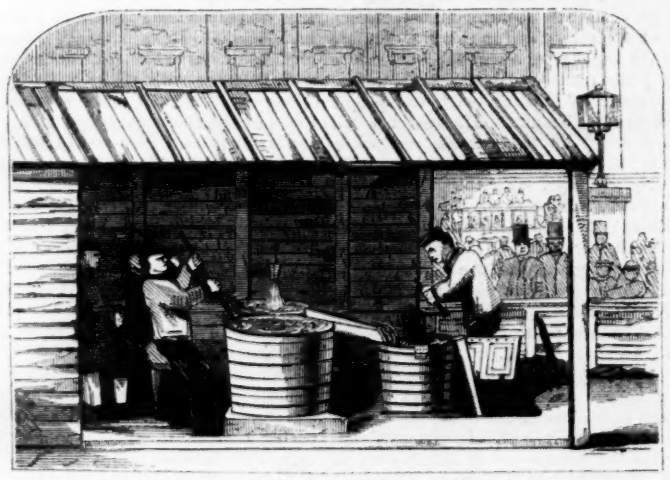
It is said, in connection with the manufactories complained of, that it is necessary to have them

DEPTFORD AND THE THAMES.

Garden Adjuncts at Deptford.



On the Margin of sad dirty Water!



Whitewashing the Thames.

close to the population, as it would not pay to remove the refuse to any great distance; and we have heard all manner of objections made to changes which, except to those concerned, seemed evidently beneficial. In the course of several inquiries in the neighbourhood of Maiden-lane, St. Pancras, we were told by dust collectors that it was quite impossible to effect the speedy and systematic sorting of the dust, &c. and so prevent the accumulation of those huge mountains which caused the surprise of most passengers. When, however, it was found necessary to do so, the dust, &c., as it was brought in daily, was sorted, and the parts likely to putrify sent away to a distance in barges; and notwithstanding that by this means a great benefit has been conferred on all living near, we do not hear that the contractors complain of being out of pocket by the change. Other instances might be mentioned to show how necessary it is for the general good to deal firmly with difficulties.

In various parts of the metropolis, at Charing-cross, Farringdon-street, and elsewhere, wooden stations have been erected for diluting the lime, and passing it in a liquid state into the sewers for the purpose of deodorizing the Thames. The apparatus in use is simple, and is worked by four men, as shown in our sketch. One is engaged in throwing the lime into two tanks, into which the water rushes. Two men are kept constantly stirring this with long sticks: another man turns a sort of puddling-engine in a third tank, into which the lime-water passes, and thence it runs down the sewer. At the station at Charing-cross forty bushels of lime, we are told, are dissolved and let into the sewer every tide.

The City officer of Health, in his last report to his Commissioners, denies that the lime will have the least protective influence; for, though it may check putrefaction for a time by fixing the organic matter in an insoluble form, yet the precipitate which is thus produced will be cast upon the foreshores of the river, and will there pass into a state of active decomposition. At Leicester and Tottenham, where the process of defecation is carried on, the greatest care is taken to prevent the organic precipitate from flowing into the rivers; because experience has proved that lime will not prevent putrefaction, but will merely hinder it, and that the precipitate which it forms with the organic matter of sewage will soon take in the most disgusting kind of decomposition.

He urges, very rightly, as we have done, the prosecution of some more radical remedy than the mere palliative influence of lime, which may, perhaps, in the end, be worse than useless.

THE CHAPEL OF EXETER COLLEGE, OXFORD.

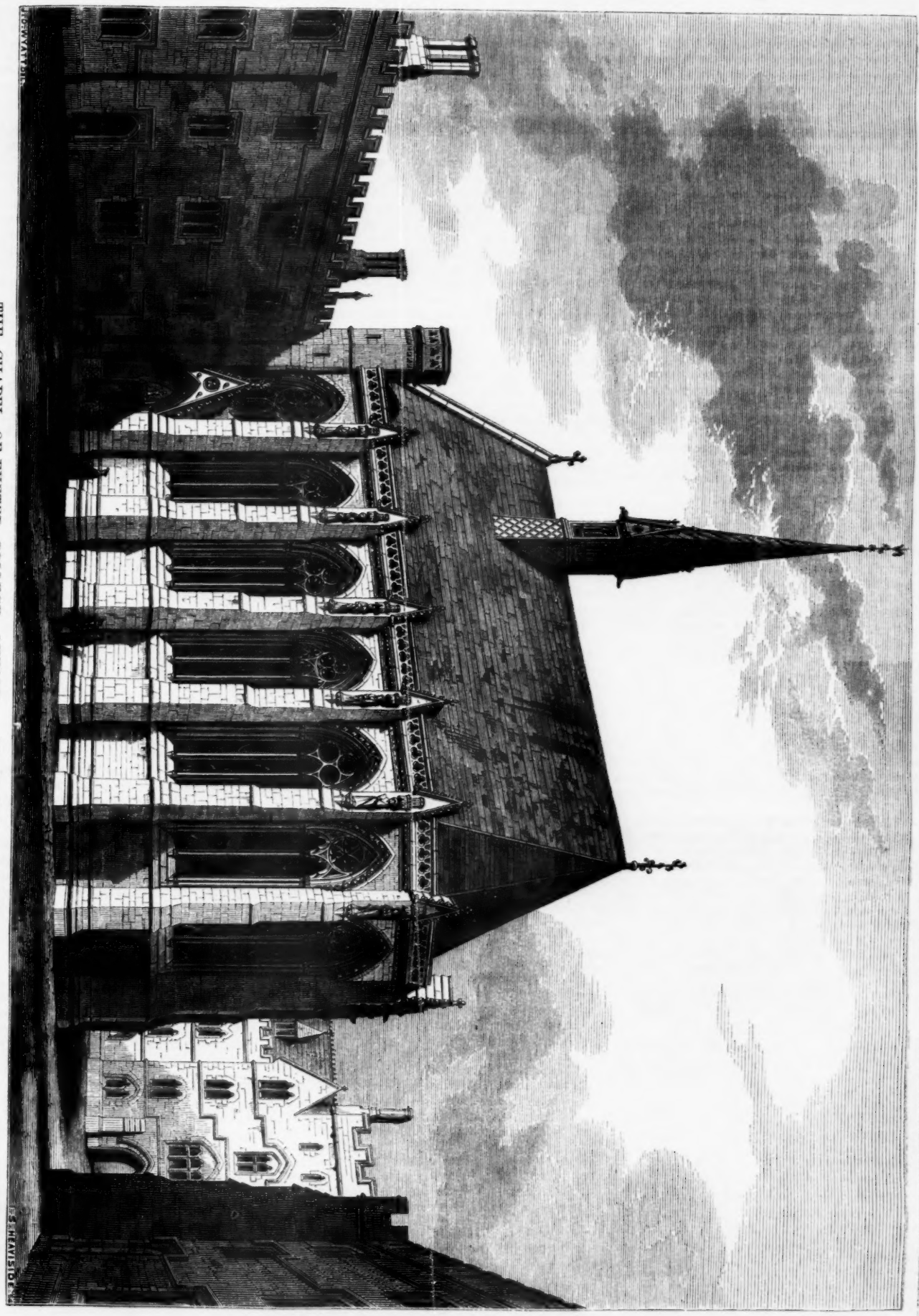
THE chapel of Exeter College, as it existed till within the last few years, though, in appearance, a poor work, of the close of the fifteenth, or the beginning of the sixteenth century, dated in reality (like many others of the Oxford buildings) only from the seventeenth century. It was a short structure, of two spans, and internally more resembled a very indifferent city church than a college chapel. As it had of late years shown considerable indications of failure, and was hardly considered safe, the college determined upon its re-construction, and commenced the raising of funds for the purpose. The insufficiency of the site, and the difficulty of finding a more extended one, caused a delay of several years. Many plans were thought of and tried, but at length it was determined to rebuild, on another site, the rector's house, which divided with the old chapel the north side of the main quadrangle, and to devote the whole of that side to the new chapel.

Mr. Scott had, for some time previous to this determination, been appointed architect to the work, and had prepared several designs. That carried into execution differs in two important particulars from the usual type (or types) of college chapels at Oxford: it is both apsidal, and is vaulted with stone. These two conditions of necessity give it a little the external effect of the Sainte Chapelle, at Paris, not that that building has been necessarily its model, but simply that it is a typical example of an apsidal and vaulted chapel, of about the same size. The chapel is internally about 90 feet by 30 feet, a very frequent size among ancient chapels. It consists of five bays, and an apse of five sides, the former containing windows of three, the latter of two lights. The entrance is in the south side of the westernmost bay.

The west end abutting against other buildings could not contain any window at a lower level than the springing of the vaulting, and has, consequently, only a rose window above that height. The remainder of its height is occupied by an organ-gallery of stone, and a lofty arcade, the object of which is to obtain deep recesses, to give more room for the organ. The vaulting is about 50 feet in height.

The westernmost bay is to be screened off at the antechapel by an open screen of stone, with double shafts of marble, which is the gift of the undergraduates; as is also to be the case with the organ. The three next bays will contain the stalls for the Fellows, and the seats for the undergraduates.

The treatment of the design is throughout rather bold and massive than elaborate. The use of stone vaulting necessitates that of massive buttresses, which contribute very much to this solidity of effect, and the details have been made large—to our minds somewhat too much so, as we said in our recent article on Oxford—to harmonize with the construction. There is little use of constructive polychromy, the Fellows of the college rather objecting to it; but in the filling in of the vaulting two colours of stone (Bath stone and a browner variety of oolite from Temple Guyting) have been used with excellent effect. The bell-turret is of timber, covered with lead, and is a very excellent piece of workmanship, though here, as elsewhere, the mouldings strike us as being somewhat clumsy. The work has been exceedingly well carried out by Mr. Symm, of Oxford. The woodwork executed by him is particularly good. The stone carving is executed by Mr. Philip, of London. The cost has been about 10,000*l*. The interior will be enriched with a great number of shafts of marble and serpentine from Devon and Cornwall, the two counties with which the college claims more intimate connection. The other buildings executed by Mr. Scott, in connection with this college, are the library, the rector's house (an excellent design, previously referred to), the completion of the Broad-street front, with a new gateway, and the formation of a small quadrangle in connection with the same.



THE CHAPEL OF EXETER COLLEGE, OXFORD.—MR. G. G. SCOTT, A.R.A. ARCHITECT.

A FREE EXHIBITION.

AMONGST the peculiar features of the modern London streets there are few more striking than the range of buildings displayed on the line of road from Euston-square for some distance westward. Here are curious illustrations of London progress, and also remarkable examples of modern sculptural art. We know nothing in the metropolis or in provincial towns which is so peculiar as the appearance here presented. Over a distance of from thirty to forty feet the gardens have been covered by temporary buildings of the most miscellaneous description: zinc works with chimney-pots of various shapes and sizes, photographs, shops, warehouses, large workshops, are year after year assuming a more substantial appearance and regular style of architecture. As a thoroughfare the traffic is constantly increasing, and when looking at these changes one cannot but regret that the space now being covered up should not have been preserved for the public use at a time when the land might have been purchased at a small cost. This opportunity has, however, been lost, and without further complaint we will look at the works of art which form a sort of sculptural exhibition in this neighbourhood. Here, arranged in most singular manner, are busts of Lord Byron, Milton, and other worthies; royal arms of different sizes and designs, heraldic crests, lions, stags, eagles in numbers, figures of fortune, justice, and birds, fishes, &c. The life-size effigy of the dwarf Sir Jeffrey Hudson ranges with casts and models of Grecian statues; and there are also examples of Gothic statues, Joan of Arc, the woodman with his hatchet and pipe, and others.

The most striking objects are the colossal lions, evidently modelled with great care from nature. There is a stag very true to nature and of artistic execution. The fountains and other garden statuary of a varied description are worthy of notice. Here is Neptune with his trident, dolphins, river gods, &c. which are suggestive. The figure of Father Thames, cast from that at Somerset House, would not be a bad idea for one of the proposed Metropolitan fountains.

Besides these are numerous examples of monumental art, some of which are simple and appropriate, though the majority are very bad.

A LIBRARY AT ALDERSHOTT.

THE Prince Consort is about to present the nucleus of a library to the camp at Aldershott, and beyond that is about to erect there an edifice to contain it, and serve as a reading-room. Captain Fowke, by the Prince's direction, has prepared the drawings, for the execution of which tenders are about to be invited from a limited number of leading builders.

THE IRON CROWN OF LOMBARDY.

THIS, the most ancient regal crown in existence, has been kept carefully stored, in the midst of the troubles that now beset Italy, in the famous basilica of St. John the Baptist, in the city of Monsa, about twelve miles from Milan. This church was founded by Flavia Theodelinda, the queen, first of Antharick, and secondly of Agilulf, kings of Lombardy. This lady, about the middle of the sixth century, presented the crown, together with other relics, to this church; and, since then, so many rich gifts have been added by kings, queens, and other personages, that the contents of this treasury, says Mr. Burges, is sufficient to illustrate the progress of goldsmiths from the days of Queen Theodelinda to the present day.

The only iron used in the construction of this far-famed crown is a narrow rim fixed in the gold work of the interior. This is said to have been one of the nails of the cross used at the crucifixion of our Saviour. The most ancient crowns were simply chaplets of plants or flowers, or a circlet of gold or metal. The ancient crown of Lombardy is a circlet of gold richly inlaid with precious stones of considerable size. For centuries this relic was used by the kings of Lombardy, and with it Charlemagne was crowned previously to his coronation at Rome. Napoleon I. placed it on his head, and who can say on what other important occasion this badge of authority, which is almost looked upon as a sacred object by the Italians, may be again used?

The crown of the Emperor Charlemagne, now in the possession of the Austrian Government, is less ornamented, but less simple in form than the iron crown. It has something of a helmet shape, and is adapted for setting forth the countenance with advantage.

WHAT CAN WE DO FOR THE BLIND?

A SOCIETY growing out of the operations of a Blind Class at Camberwell, is being established with the excellent view of improving the social condition of the blind,—unfortunately a very large body. A working committee has been formed, who intend to train the blind in classes or at their own dwellings, to remunerative manual labour, mental study, or the discharge of household duties (as the latter tend so much to their domestic comfort) and to open legitimate channels for disposing of the fruit of their industry. A prospectus will shortly be issued, showing wherein the society differs in its aim from any society that has preceded it. One important point is, that they purpose training the blind from infancy, whilst in other institutions the blind are not admitted before the age of twelve; and with the endeavour to render them more independent, the committee also mean to use every effort that may tend to the improvement of health and physical strength. They are particularly anxious that the mental powers of the blind should be fully cultivated, thus providing them with resources for maintaining themselves besides those of mere mechanical labour, and enabling them to find home pursuits, which will greatly conduce to their domestic happiness. The committee may, hereafter, too, wisely turn their serious attention to devising some cheaper mode of providing books for them.

The Association does not intend to limit its operation to any particular locality, but to diffuse its principles throughout the country; and therefore appeals to the public in general, and more especially, to the friends of the blind, to assist them in their philanthropic and arduous undertaking. Mr. Alexander Mitchell, of 6, Wellington-road, Camberwell, is acting as honorary secretary, and will gladly receive suggestions and contributions.

SHALL THE POLYTECHNIC INSTITUTION SINK?

THE fate of the Polytechnic is sealed. It had been doing well up to the occurrence of the lamentable accident in January last, when the losses incurred in the way of compensating the sufferers, above fifty in number, and in litigating certain cases of extravagant demand, swallowed up its available resources, and popular philosophy became insolvent. In the person of the Polytechnic science and reasonable amusement for the people are declared bankrupt, and that without a dividend. A property which cost 35,000*l.* and which is still thought worth 20,000*l.* for the purposes of a Polytechnic, may be had for less than half the latter sum, and yet there are no bidders. The directors of the old Society, who are best acquainted with its capabilities and prospects in a commercial point of view, subscribe about 1,000*l.* in new shares, with a view to create a new company, and two liberal gentlemen in the City offer another 1,000*l.*; and at this total at present the enterprise stands. In another week it will be too late to save from sacrifice and ruin piecemeal the most deservedly popular, useful, and morally unobjectionable place of public amusement in this metropolis. Shall it be said of London that its vanity or profligacy can better support a thousand saloons than one Polytechnic?—that vice and folly prosper where science and morality fail? Where are the Christian public of London? They can subscribe for parks, play-grounds, drinking-fountains, and other out-of-door summer recreations for the people, to draw them away from the unwholesome excitement of the gin-palace, beer-shop, or casino; but some thought should be given for in-door winter entertainments. Shall the failure of the Polytechnic discourage every similar effort to elevate the moral taste and intellectual tone of the popular mind? A grave responsibility rests somewhere, and that of the most gratuitous character, as we are credibly informed that 10,000*l.* would set the good old bark afloat again, with the certainty, under right direction, of a return of at least five per cent. upon the reasonable amount of capital required to work the concern, when relieved of its present incumbrances.

SAVE THE POLYTECHNIC!

A PENNY SUBSCRIPTION.

IT is stated that this most valuable institution is about to perish for the want of 10,000*l.* to cover the loss attendant on the late accident. Surely the working men of Great Britain will not allow this. Let them come to the rescue by a Penny Subscription. Let a person in each workshop collect these pence, and pay them over to the treasurer of the Company, and in a week the amount will be raised, and the Polytechnic will again be the most popular institution of the working classes. I would also suggest that to those workmen who subscribe a shilling, two orders of admission should be granted in the course of the year, which would allow them and their wives to see what a ship they had helped to save.

A WORKING MAN.

THE "BUILDER'S" LAW NOTES.

Income-Tax.—An estate was contracted to be sold, and to be conveyed upon the terms that part of the purchase-money should be paid down, and the residue by half-yearly instalments, with interest extended over a period of thirty years. This was held not to be "annuities, yearly interest of money, or other annual payments," within the meaning of the Income-Tax Act, and therefore not chargeable with income-tax.—*Foley* v. *Fletcher.*

Friendly Society.—A member of a friendly society was expelled for non-payment of arrears, and was afterwards sued by the society for the arrears due while he was a member. The action succeeded, the judge holding that, although the society was voluntary, the rules formed a contract, and although the member in default was expelled, that did not deprive the society, after he was expelled, of the right of suing him for the subscriptions which were due while he was a member.—*Houghton* v. *Leaf.*

Friendly Societies.—Plaintiffs, trustees of a friendly society, sued the landlord of an inn, in which the society had met, for certain banners, &c. in his possession. It was held that he was bound to give them up, as he had never made any stipulation for rent, but had agreed to accept of the amount spent in refreshment as sufficient remuneration for the use of his room.—*Pitcher and Cork* v. *Girling.*

Carriers.—Plaintiff delivered cattle at Leominster, to be carried by rail to Rugby, and told his servant at Rugby to receive them. The servant attended; but as the company had not sent any note, he was refused possession of the cattle, and did not get them for twenty-four hours. It was held that the company was bound to make good the loss sustained by the cattle not being in good condition for the fair of the next day, as they had been so long without food.—*Carmardine* v. *Shrewsbury Railway Company.*

Falling of a Floor.—A tenant of premises, which he had hired for the purpose of storing goods therein, placed on the floor a heavier amount of goods than from his previous knowledge of the building he ought to have done, and the floor gave way in consequence. He sued the landlord for the expense he was put to for a new warehouse; but it was held that he could not recover, as the accident had resulted from his own fault.—*Barnby* v. *Blake.*

Action for Wages.—Plaintiff was engaged by the defendant as a general farm servant, and took his meals and slept in defendant's house. No specific time of hiring was named. The plaintiff left the defendant's service before the expiration of a year from the time of hiring, without giving him warning, and without his consent. It was held that the plaintiff was a menial or domestic servant, and not merely a husbandry servant, and was therefore entitled to wages as such, with the exception of the forfeiture of one month's wages in lieu of warning.—*Smith* v. *Jefforth.*

CHIPS FROM IRELAND.

PUBLIC works under the War Department promise to be unusually numerous this season, and plans have been already prepared at the Commanding Royal Engineer's Office, Dublin, for the following—as well as for many others of lesser importance—viz. alterations and additions to guard-house and cells at the old barracks, Fermoy; new kitchens, waterclosets, &c. to officers' quarters, at Newbridge Barracks, county Kildare, Curragh district, where also a new chapel-school is being erected, Mr. Harford, builder; additional accommodation at Tralee barracks, and a breakwater round Magilligan Tower, Lough Foyle. Tenders for the above are being received.

A new church—for which a site was presented by the proprietor of the soil, Mr. Robert Warren—has been recently completed, from designs by Mr. S. Symes, architect, in the picturesque locality of Killiney, county Dublin, and on the north side of the obelisk. It is capable of containing about 250 persons, and has a gallery, tower, and spire at south-west angle, open-timber roof stained and varnished, and a projecting chancel. Mr. Moyers, builder. Cost about 1,500*l.*

The contract for Mr. Argo's new buildings at

Rathfarnham, according to the newly-arranged plans, Mr. J. J. M'Carthy, architect, has been given to Mr. Meade, builder, at 13,200*l*. The structure will comprise two long buildings—front and flank—200 feet and 218 feet respectively, and forming two sides of a square, hereafter intended, as we are informed, to be filled up. The style is very plain, being almost entirely devoid of ornament, both internally and externally, and can scarcely be designated as of any particular character. The arrangements comprise—on ground-floor, a central entrance-hall, thorough corridors, reception-rooms, parlours, almonry, &c. in front building; and in flank ditto is a large refectory, with culinary offices, &c. &c. in proximity. On the other floors are library, novitiates' and community rooms, &c. together with seventy cells.

The church of Drumconrath, county Meath, is to be refitted by the Ecclesiastical Commissioners.

Alterations and enlargements are to be made to the County Court-house at Longford, and a new entrance-lodge built to the county gaol.

Messrs. Turner and Gibson, of Hammersmith, Dublin, are the contractors for the new patent rolling balance-bridge — Mr. Michael Kenny, patentee—now erecting over the entrance to St. George's Dock, at Dublin; as also for the iron roofing, &c. of Kilmainham new gaol buildings, of which Mr. John M'Curdy is the architect.

The contract for Zion Church, Rathgar, county Dublin, is disposed of for 12,000*l*. to Messrs. Cockburn and Son, builders. We believe Mr. Raffles Brown is the architect.

A new Scotch church is to be erected in the city of Cork, by subscription.

The new Bank of Ireland at Roscrea has been completed, under the direction of Mr. S. Symes, architect, by Mr. Bagnell, contractor. Cost, 2,500*l*. The style is somewhat Italian, and the interior comprises the usual arrangements of cash-office, agents' and sub-agents' offices, and apartments.

COOKERY A QUESTION OF SOCIAL SCIENCE.

A VISIT to the school of cookery seems to show its utility. Under a professor, who has tact in teaching, classes are formed for instruction in the higher branches of cookery, including soups, entrées, ices, confectionary, and every requisite for cooks and housekeepers. To this ladies may send their servants, or young persons in whom they may feel an interest, at a moderate cost. There are other classes for a plainer description of cookery, which cannot fail to be useful. One great advantage of this school is, that the pupils not only see the various matters done, but also are made to do them. The chemistry of cooking is familiarly explained, and dishes prepared which are pleasant both to the sight and the taste. The power of cooking a neck of mutton, so as to make a delicacy of this ordinary joint, would be useful in thousands of homes. Many will say, that they would not be able to afford to cook in the best manner; but it is a fact that it is an actual saving. By skilful cooking the whole of the nutritious portions of the food is preserved, and nothing wasted. Many would feel surprise at the good appearance of some of the dishes which are here made, and their small actual cost. The fear is, that the establishment will not meet with the appreciation of those whom we should chiefly wish to see benefited; and it should be known that one of its objects is to give instruction to the girls from the National Schools of the district in plain cooking and house-cleaning; and a few boarders are received into this class at 7*s*. per week. We have before noticed the precarious nature of the employments which are followed by large numbers of the daughters of the working classes of the metropolis; such as needlework, artificial-flower making, &c.; and it would be worth while to consider if it would not be a benefit to many of these girls to educate and fit them for respectable service, where, even in rather humble positions, they are well fed, clothed, and sheltered. If they have education which will enable them to keep simple accounts, a knowledge of cookery, and good household management, with right conduct, they are almost certain to fall into situations which will ensure present comfort, and, with care, a provision for after years. If, however, this is not needed, the cost and trouble will have been well bestowed, by the utility of the knowledge here gained when applied at their own homes, or in case they become mothers of families.

It is every day a more common practice to examine persons as to their fitness to undertake particular situations. The mates and captains of ships; the various grades of government clerks; the officers of the army and navy, are all now obliged to obtain certificates. Would it be useful if, in addition to other matters of household economy, maidens of a certain position were required, before obtaining a marriage certificate, to be able properly to cook a dinner. If this were made the law, what a "run" there would be upon the range!

THE DRINKING-FOUNTAIN MOVEMENT.

IN consequence of an unavoidable delay having arisen in the erection of drinking-fountains for Bristol, the committee of the Local Board of Health, appointed to carry out the wishes of the citizens in regard to the matter, have determined upon erecting some temporary fountains. Two have accordingly been fixed, one at the corner of Prince's-street, near the bridge, and the other on the Welsh Back. They are both formed of cast-iron, painted to represent Scotch granite. At a convenient height is placed a bowl, into which flows, from the mouth of a lion, a small stream of clear water, and at the side is an iron ladle. A second bowl is placed near the bottom, from which dogs or other animals may drink. Similar fountains will be erected in other parts of the city. At the corner of St. Augustine's-churchyard a fountain, the gift of Mr. Jose, is in course of erection. The design is Gothic, the bowl being of marble; and the whole will be surmounted by a stone canopy. Mr. Lang has fixed upon a site nearly opposite to the Blind Asylum for the fountain he intends presenting to the city.——Works are in progress in the Arboretum, at Nottingham, for the erection of a fountain at the expense of Mr. and Mrs. Enfield. The design includes a cascade and drinking-fountain.——Mr. C. M. Campbell is about to present to the town of Stoke three drinking-fountains which will be erected at points commanding the three principal entrances to the town.——The fountain which the inhabitants of Ann-street, Birmingham, propose to erect in commemoration of her Majesty's visit to this town in June last, has been inaugurated. The fountain, which is from a design by Mr. E. J. Payne, was originally intended to be executed in low relief in stone, but the committee determined to carry it out, though at an increased cost, in high relief, and in a more durable material. They accordingly entered into arrangements with the Coalbrookdale Company, who undertook to execute an iron cast on very low terms, in consideration of being allowed to retain the copyright, which they valued at 25*l*. An enriched wreath surrounds a deep circular recess, in which is placed the basin, formed of a marine bivalve shell, backed by rushes and water-plants. Above is an angel bearing a Bible, inscribed with the words of our Saviour to the woman of Samaria—"Whosoever drinketh of this water shall thirst again; but whosoever drinketh of the water that I shall give him shall never thirst." The fountain is to be placed near the entrance to Christ Church. Below the fountain is placed a small drinking-trough for dogs. Mrs. Ryland, the proprietor of the Islington Building Estate, has also erected a drinking-fountain with a dog-trough, which has been opened for public use, adjacent to the Five Ways Tavern, Islington. The design is by Mr. A. B. Phipson, of Birmingham, architect. The Ladywood locality is about to be provided with a number of drinking-fountains, which will be erected at the sole expense of the lady named.——The first public drinking-fountain in Bolton has been erected. It is an octagon pillar, with two small troughs at the foot for dogs. The sites for seventeen fountains have been approved, as has also a design for a fountain and cattle-trough for the Market-square. Six granite fountains from Aberdeen have arrived and will be at once erected.——A fountain in memory of the late Mr. William Mawdsley, founder of teetotalism in Southport, is in course of erection there, on the plot of ground fronting the Exchange buildings.——One of the fountains presented to the inhabitants of Newcastle-upon-Tyne, by Messrs. W. A. Dunn and Co. is in course of erection in Grey-street. The site selected is the north side of Earl Grey's monument, a portion of the railing at the base having been removed for the purpose. The stone portion of the work is polished Peterhead granite from works at Aberdeen.——Six drinking-fountains are to be erected at Kilmarnock.——The fountain movement flows far northward. Miss Campbell, of Kilravock Castle, has arranged for the erection, at her own expense, of a fountain and cattle-trough at the potato-market in Inverness.——The fountain which has been for some time in the course of erection on the Belfast quay, opposite Queen's-square, says the local *News Letter*, to commemorate the name of Captain Caldor, and contribute to the benevolent work in which he laboured, is now almost completed. The water has been supplied for cattle.

The Drinking-Fountains Competition.—Sir: I can vouch for the correctness of what you stated as to the management of this competition, and, in the interest of honesty and art, wish to ask the committee a question. Did not the very parties to whom they have awarded the first prize send designs *after* the date fixed by the advertisement? They have been working with the officers of the society some time, and are the authors of the absurdity on Snow-hill. I sent in solely because I had faith in Mr. Hawes as a man of honour, and I invite him to reply to my question. COMPETITOR.

Water in the Zoological Gardens.—May I be allowed, through your columns, to call the attention of the public to the fountains in the Zoological Gardens, Regent's-park? The classic elegance and simplicity of the design, the ease with which the water can be turned on and off, and the beautiful contour of the drinking amphoræ, are worthy of the admiration of every visitor of taste! If I were to hint a fault——but let your readers go and look at the beauties themselves.

W. H. B.

THE HORSE-SHOE ARCH.

IN Mr. Hayter Lewis's paper on "Saracenic Architecture," read by him at the Architectural Exhibition on April 12th, he says, I am uncertain of the origin of the horse-shoe arch, &c.; and concludes that the form is constructionally bad. I have been for some considerable time past of opinion, that the use of the horse-shoe arch arose out of good construction, and have made several experiments with ribs of that form, both of wood and iron, on a limited scale, and find that with a rib containing from 230 to 240 degrees of a circle, with depth of section of rib equal to a quarter of an inch to each foot of span of arch,—the ends of the rib being placed on upright pieces of timber, representing walls, the ribs loaded with weight greater in proportion to the span than roofs are usually required to carry, — no lateral strain or thrust takes place, either outwardly or inwardly; but that, by the sweep of the curve being prolonged down below the line of the semi-circle, it has the effect of neutralizing the outward thrust of the rib at that line. May not this have been the origin of that form of arch in good construction of timber, and afterwards copied in stone of bad construction? I can see no reason why roofs of this construction, in timber of laminated ribs, may not be executed of any span that is ever likely to be required, as there is no difficulty in improving their strength by principal rafters, springing out of the curved ribs, and meeting at the apex in a metal saddle-box, with an iron bolt let down through the same, and properly fixed to the crown of the rib, and struts being fixed from there to support the principal rafter between the apex and the springing from the rib, thus making the crown of the rib the strongest part of the roof instead of its frequently being the weakest. A. P.

CHURCH-BUILDING NEWS.

Lincoln.—The restoration of Russell's chapel, at the south-east angle of the cathedral, says the local *Chronicle*, is now being proceeded with, necessarily slowly from the minute care and delicacy which have to be observed in the manipulation of the work. The carving is deep and elaborate, yet not a whit too much so. The restoration is being carried forward under the superintendence of Mr. Sandall, the master mason. Longland's Chapel, which has been recently restored, is now (it is added) becoming invested with that softness of expression which time and weather can alone give, and the same harmonizing influences may be observed making progress upon the restored niche-statues over and to the right of Russell's Chapel. This portion of the cathedral is rich in adornments, and when the restorations at present in progress are completed, some idea of the beauty of the grand old edifice in its pristine glory will be capable of realization.

Southampton.—The tenders received for repainting and decorating the church of All Saints were,—Messrs. Gray and Sons, London, 235*l*.; Josiah Puntis, Southampton, 285*l*.; Dowdall, Southampton, 295*l*.; and Buchan, Southampton, 380*l*. The tender of Mr. Puntis was accepted. The decorations will be carried out under the superintendence of Messrs. Guillaume, Parmenter,

and Guillaume, of Southampton, architects. The ceiling of the church will be decorated in blue and gold, and the chancel ornamented n Genoa and Sienna marblings.

Wednesfield (*Staffordshire*).—The foundation-stone of a new Wesleyan chapel has been laid at Wednesfield Heath. The building will be executed almost entirely in brick, this material being made cheaply on the ground; and the funds placed at the architect's disposal being very limited, stone will be but sparingly used. The walls generally will be built of red, the plinths, strings, bands, and a portion of the arches, in blue brick, and the quoins in white. The style, says a local paper, if it can at all be classified, may be said to be Norman, but it is rather an adaptation of local material in giving a character to the building, while fitting it for its future requirement at an economical outlay, and which nearer assimilates to that of the architecture of the eleventh century than any other, though a freedom of treatment has been adopted in preference to any particular style being followed. The plan is cruciform in outline, though the transepts have but a slight projection beyond the side walls. At the front, on the angle adjoining the point where the two roads forming the boundary of the site meet, a turret is introduced. The roof will be open, framed and ceiled between the rafters, all the carpenters and joiners' work throughout being stained and varnished. The arrangement of the seating is central. The chapel will accommodate about 400, of which 150 sittings will be free. Mr. Bidlake, of Wolverhampton, is the architect, and the contract has been taken by Mr. Palmer, builder, at a cost of 1,033*l.* 10s.

Warwick. — The foundation-stone of a new Roman Catholic church has been laid at Warwick. The new edifice, which is situated in West-street, and dedicated to the Virgin, will be built from the design of Mr. Pugin. The style will be decorative, and the material Bath stone and red brick. The building will consist of a nave, two aisles, and a chancel, and its length from east to west will be 86 feet; its width from aisle to aisle 45 feet. Mr. Gascoyne, of Leamington, has the building contract.

Ystradgunlais. — The contract for the new church here has been let to Mr. John Gabe, builder and contractor, &c. Merthyr Tydfil, for 1,450*l.* The ground for the foundation has been dug, by the labouring portion of the neighbourhood, gratuitously.

Melbourne (*Derbyshire*). — The rapidly increasing size of the town of Melbourne, and the consequent increase in the number of interments, made the present burial-grounds much too crowded; and somewhere about a year ago it was determined that ground should be purchased for a new cemetery, and chapels built. The burial-ground, although called the "Melbourne Cemetery," lies at a short distance from King's Newton. The cemetery chapels constitute one building, which is of stone, in the Gothic style. In the centre is an open ornamental arch surmounted by a spiral bell turret. On the south side of the arch is situated the chapel for Dissenters, on the north that for the Churchmen. The lodge at the entrance to the burial-ground is of brick, faced with stone. The ground is to be laid out in an ornamental manner. The plans for the chapels and lodge, as well as the grounds, were furnished by Mr. B. Wilson, of Alfreton, architect, and the buildings were erected by Mr. Edwin Cooper, of Ashby-de-la-Zouch. The cemetery grounds are contracted for, but not yet completed.—— A vigorous effort, it is said, is about to be made to restore the old parish church of St. Michael, Melbourne. The church has been standing for a period of about 800 years. The style of architecture is the Anglo-Norman. It has, however, suffered so much, from long neglect, that it has become necessary to take steps for its preservation. An appeal to the parishioners realized the sum of 1,000*l.*, and the committee engaged Mr. Scott to examine the edifice, which he characterises as one of uncommon interest, and expresses an opinion that its distinctive features, though in some measure obliterated, are capable of being exhibited to far greater advantage than at present, by even a partial restoration. Mr. Scott, however, adds:—"I fear that these repairs must be extensive, as not only has the stone-work been most recklessly mutilated, but the church appears at some early period to have suffered from fire, and the surface of the stone-work, in the lower parts, is consequently much injured." In addition to the repairs, and works of architectural interest, which Mr. Scott recommends, the committee are desirous of providing church accommodation suitable for a population which has almost doubled within the last fifty years, and now amounts to near 3,000 souls. At present, from the bad arrangement of the pews, not more than 300 can be seated, of which only about thirty sittings are free and unappropriated, while, by the plan Mr. Scott proposes, there will be room for 670. The cost of these works is estimated at 2,000*l.*

Manchester.—The foundation stone of a new church, to be called St. Peter's, Oldham-road, Manchester, was to be laid on Saturday. The site of the new church is at the bottom of Spittall-street, out of Oldham-road. The design is by Messrs. Isaac Holden and Son, of Manchester. It is in the Lombardic style, and, according to the local *Courier*, will be unlike any other church in the city. It is to be built of brick, and consists of nave, with north and south aisles, and a semi-circular apse at the east end. The tower, which partakes of the character of the Italian campanile, stands at the north-west angle: it will be surmounted by an ornamental lantern. The church will have seats to accommodate 1,350 adults, 500 free. Some progress has already been made with the building. The cost of the contracts for every part of the works, including heating, lighting, commission for architects and others, is 3,900*l.* Messrs. Clarke and Jones, and Rutherford and Lamb, are the contractors.

Westby (*Blackpool*). — The foundation-stone of the Roman Catholic Chapel of St. Ann, Westby, has been laid. The site of the building, and of a residence for the pastor, embracing together about two acres of ground, has been presented by Miss Dalton, of Thurnham. It is situate a little below Westby Mill, on the Blackpool road. The estimated cost of the edifice is about 2,000*l.* Mr. Catterall, of Kirkham, is the contractor. It will be in the Tudoresque and Gothic style, standing north and south, with a turreted belfry over the southern entrance. At the north, where the altar is situate, the building assumes the form of an apse, and diverges to the west, to communicate with the residence of the pastor.

Cleckheaton.—The new Congregational chapel at Cleckheaton has been opened. It has been erected from designs by Messrs. Lockwood and Mawson, of Bradford, and has cost between 7,000*l.* and 8,000*l.* (towards which upwards of 5,000*l.* have been already subscribed). It is in the Italian style. The foundation stone was laid on the 17th July, 1857, by Mr. F. Crossley, M.P. and it has been completed without any accident. It will seat about 1,500 people. The frontage is 66 feet towards the principal street, and the depth 140 feet. The edifice is approached by a flight of ten steps, extending within the pedestal at each end the whole width of the front. Upon the highest of them rest six columns of the Corinthian order, supporting arches between rusticated piers, which form the angles of the portico. The building is crowned by a pediment, the apex of which rises to the height of 55 feet from the ground. The tympanum is filled in by a circular panel bearing an inscription. The chapel is a parallelogram of 90 feet by 60 feet, and 38 feet in height. The interior is simple. It is lighted in the evening by three sun-lights. The galleries are supported upon ornamental cast-iron columns. A semi-circular recess, covered with a panelled and ornamented semi-vault at the end of the chapel, is filled in by the organ, and in front of it, within the communion pew, is the large platform for the minister. Beneath the chapel there is a school-room, 54 feet in length, 60 feet in breadth, and 14 feet in height; a lecture-room, capable of containing 150 persons; three class-rooms, a minister's vestry, and an apartment for tea meetings. In the basement story is a chapel-keeper's house, and the apparatus for heating the chapel.

SCHOOL-BUILDING NEWS.

Milton.—The foundation-stone of the new schools about to be erected for the accommodation of the children attending the parish church of Milton has been laid by the Mayor of Gravesend. The building is from the designs of Mr. R. J. Jones, of Milton, architect, and will be in the style of the fourteenth century. It is to be constructed of white bricks, with ornamental bands of red brick, the voussoirs of the arches over the windows and doors being alternately of red bricks and Caen stone. The school-room will be 40 feet long by 18 feet wide. It will be divided by a thick curtain. The porches and lobbies, as also the hearths to the fireplaces, will be laid with red and black tiles, from the Poole Architectural Company. The roof will be slated with a red tile ridge, and crowned in the centre by a wooden bell-cot, with a spire of oak shingles, the whole surmounted by an iron cross. Mr. William Everest, of Gravesend, is the contractor.

Great Bridge.—The Wesleyan New School Committee at Great Bridge, being about to erect larger and more commodious schools, have selected the plans designed by Mr. Edward Holmes, of Birmingham, which were submitted in limited competition.

Barnsley.—The new Roman Catholic schools, the foundation-stone of which was laid at Barnsley some months ago, by Mr. Locke, M.P., and which have been erected at a cost of nearly 3,500*l.*, have been formally opened. The buildings comprise three large schools, residence for schoolmaster, class rooms, play-ground, &c. They are designed in the early decorated style of architecture. The boys' and girls' schools are each 60 feet long by 20 feet broad, while the infant school is 40 feet by 20 feet, in addition to two class rooms 30 feet by 20 feet. They are of stone, and accommodate 600 scholars. The residence of the master is situate in the play-ground, which is half an acre in area. The cost of the building is provided by subscription (the Rev. H. J. Cooke having subscribed 1,000*l.*) aided by the usual Privy Council grants. The architects were Messrs. Weightman, Hadfield, and Goldie, of Sheffield. The masonry work was done by Messrs. Robinson and Sons; joiners' work by Mr. Harrison; plasterers' by Messrs. M'Mahon. Mr. Maskell was the clerk of the works.

Leeds.—On Whit-Tuesday the foundation-stone of the New National Schools at St. Stephen's, Burmantofts, was laid. The architects are Messrs. Dobson and Chorley, and the cost will probably be 1,600*l.* towards which about 500*l.* has been contributed, and about 700*l.* or 800*l.* expected from public grants.

WARWICKSHIRE BLUE LIAS LIME.

WE are told that we have injured a good material, by saying in our account of the works to be done in the construction of the southern high level sewer, that—"the lime is to be blue lias, as Barrow or Aberthaw," whereas the specification says the lime is to be Barrow, Aberthaw, or other approved blue lias lime mortar. Our expression, it will be seen, was strictly correct, but we willingly give the statement in other words, the more so as we think well of Mr. Greaves's blue lias. It is one of the facts learnt in journalism, that the merits of a man or a material may be set forth a great many times without being of so much advantage as to lead to any expression of opinion; whereas the mere omission of the name of the man or the material does such an immense amount of injury that the delinquent editor is sure to hear of it!

A word or two about the Warwickshire blue lias may not be out of place. In 1756, Smeaton, being engaged in the construction of the Eddystone Lighthouse, found it necessary to have a cement capable of hardening under water, and his experiments led him to the use of blue lias lime. Yet twenty years ago this article was little known, and less understood, in London, most likely owing to its costliness, when Mr. Greaves, who owned large quarries in Warwickshire, where this lime had been known and used for many years, determined to take a wider range; and, being possessed of considerable capital and enterprise, he took advantage of a reduction in the rates of tonnage on the canals, and brought it into London at 100 per cent. less price; thus making it available for all ordinary purposes, which was speedily taken advantage of by those connected with the building trade, who found it an article at a very moderate cost, more suitable than they had hitherto been able to get for all hydraulic works.

Blue lias limestone, most of our readers know, is found at Lyme Regis, in Dorsetshire, stretching away in a north-easterly direction to Whitby, in Yorkshire, and varies much in its hydraulic properties; but, after severe tests, none, we believe, is found more valuable than that produced in Warwickshire, and many thousand tons of the lime are annually sent to London.

As showing how hard and compact blue lias lime will become, it was lately found necessary, we are told, to have recourse to blasting, to remove some concrete which had been put in twelve months, at the large railway and dock works now being constructed at Brentford, by the Messrs. Tredwells, to enable them to make a deviation in the work.

Our own experience of Mr. Greaves's blue lias lime, we have no hesitation in saying, is exceedingly satisfactory.

ARCHITECTS' BILLS OF QUANTITIES.

BISHOP'S STORTFORD CONGREGATIONAL CHAPEL.

SIR,—I am sure that the thanks of the trade are due to Mr. Glasscock, for the manly and straightforward course he adopted in exposing this matter, and for refusing to tender again under the circumstances detailed.

The charge for the quantities being very much higher than the usual professional fees, should at least have guaranteed accuracy, or what plea existed for the charge at all, if the builder was compelled to take the trouble to take them out again, or employ a surveyor to do so at his own expense, for the purpose of checking work that the architects had already been so highly remunerated for performing? The proper course should have been for the parties to have taken out quantities for themselves in the first instance. I always refuse to tender for works of any extent, unless the builders are allowed to appoint a surveyor on their behalf, to prepare the quantities in concert with the architect or the surveyor appointed by him. This course avoids complaints, for the architect and builder are each represented, and in case of omissions, the surveyor is held responsible, and the charge of 1½ per cent. is found sufficient for such liability. The only deviation from this precedent that I remember, was in the case of the Norwich Union, where quantities were furnished by the architects alone, and although the builders appointed a surveyor on their behalf, their right to take this course was denied: those who tendered were compelled to do so from quantities so prepared, or not at all.

The case of an architect supplying quantities for his own works without allowing the privilege to contractors of also naming a surveyor, is extremely rare. This mode of procedure has, I know, been deprecated by the editor of the *Builder*, whose impartiality is admitted; and should the communications on this subject succeed in again eliciting his opinion, I am confident it would be greatly esteemed by the trade, and would materially assist any settlement of the question.

Mr. Glasscock is certainly in equity entitled to compensation for loss of time.

The proposal to reduce the walls and stonework to cover such palpable blunders was most extraordinary.

A LONDON BUILDER.

*** We have received from the architects of the Bishop's Stortford Congregational Chapel a paper on "The Quantities Question," commencing with a reply to Mr. Glasscock's letter. We cannot give consideration to the whole at this moment, but insert what relates to the matter in question. We are compelled to add, that it does not seem to us any reply at all, but that here the matter must stop so far as we are concerned. Mr. Glasscock would seem to have a case against the committee which they might find difficult to combat:—

"Your space is too valuable for mere personal discussion. We simply remark that the tender of a respectable firm offering to execute the works at the sum quoted, taking on themselves all the responsibility of the quantities after having had full opportunity for testing them, is proof sufficient to any impartial person of the general accuracy of the quantities referred to; and the fact of two out of three of the contractors who first estimated having again tendered, and the committee (of which your correspondent is a member) having, ultimately, without, we believe, an opposing vote, decided to accept the tender of Messrs. Young and Co. is an equally convincing proof that everything has been conducted in a straightforward manner, both on the part of the committee and their architects.

We merely add, to make the matter more clear, that to the best of our knowledge each of the four last competing contractors was made aware of the peculiarity of the case before the tenders were received; and further, that your correspondent himself cleared the way for the committee to act by stating to them that, after the architects' intimation that a more extended competition would have secured lower estimates, he would withdraw, and not stand in the way of their procuring further tenders.

POULTON AND WOODMAN."

MANUFACTURERS' COMMISSIONS TO ARCHITECTS.

SIR,—I send you herewith, for publication, copies of two letters received from a gentleman following the profession of an *architect*.

The first runs thus:—

"Gentlemen,—Having been from home some time, I could not attend to your account sooner. *Having always a commission on such work*, I should like you to say what you *generally allow* in such cases.—Yours, respectfully,

* * * * *"

On hearing that the desired commission could not be allowed, he writes:—

"Gentlemen,—Herewith I beg to hand you a cheque for the balance of your account * * * * * and request your acknowledgment by return of post. In future I shall give my orders to ——— and Co.—Yours, &c.

* * * * *"

The letters speak for themselves: ——— and Co. evidently allow the commission. This is not merely an exceptional case, as regards the custom of *architects*. The letters imply such a state of venality on the part of builders and manufacturers with whom they have to do, that for the credit of the profession, and protection of *honest* tradespeople, it should be exposed in every possible way.

It would be absurd to occupy your space with arguments in condemnation of a system which must present itself to every right thinking man as being morally wrong. But I wish to draw the attention of your readers to the *great extent* to which it exists: scarcely a week passes but that we receive applications for our "prices and commission to architects."

I believe that many look upon this commission quite as a "matter of course," and in every way as regular as their professional remuneration; so that it becomes a question as to whether the architect will be outbid by his client or the tradesman whose work he is superintending. The Institute of British architects have made one of the conditions of membership dependent on the candidate having no interest in the execution of the works he is superintending.

There are, however, many honourable men that do not belong to the Institute, for the protection of whose reputation and standing the system of "commissions" should be exposed. Surely, the great body of the profession are opposed to such practices, and the only way to discountenance it is to refuse to have any dealings with builders and manufacturers who are known to allow commissions to professional men. If this were done with determination, it would soon become a losing game; but whilst it is followed by many of our leading manufacturers there is no other way of uprooting this growing evil.

If manufacturers would but take a broad view of the question, they would see that, for the sake of securing a stray order here and there, they are laying a permanent tax on their productions. They must charge in some way or other for these commissions in the price of their goods, and with the increased cost to the public proportionally limit the employment of their manufactures.

WAT TYLER.

BUILDERS' RESPONSIBILITIES.

THE writer would be glad to be informed what would be the proper course to pursue in the following case. He was engaged as architect to design and superintend the erection of an elaborate and highly decorated shop-front, at a cost of about 500*l*. and, in order to insure good work, specified ornaments of a certain well-known manufacturer. These ornaments began to crumble away within twelve months or so of their being fixed, and have since that time been dropping down piece by piece. The ornaments were ordered through the builder, and not by the architect. The builder now endeavours to screen himself in consequence of acting under the architect's instructions, and the manufacturer (strange to say) denies his own responsibility, stating that he never warrants the durability of his ornamental work when used externally, though it frequently stands for twenty years or more, and he uses it for external decoration to a considerable extent himself, as "its durability depends upon a variety of contingencies, such as exposure to sun and frost, and insufficient painting, in the first place," &c. &c.

The ornaments are of composite, and were secured by the manufacturer himself to the wooden entablature of the shop-front on the builder's premises.

It should be mentioned that there was no denial of responsibility on the part of the manufacturer at the time the work was executed.

OLD BROAD STREET.

SURVEYORS' ACTIONS.

THE LANDSCAPE GARDENER AND THE VOCALIST.

FORREST *v.* GASSIER.

AT Brompton County Court, before Mr. Moody (Deputy Judge).—The plaintiff is a landscape surveyor, residing at Palmerston-terrace, Camberwell; and Madame Gassier, the defendant, is the well-known operatic singer, residing at Michael's-grove, Brompton.

Mr. Forrest.—I claim 5*l*. of this lady, balance of 8*l*. for a survey and plan of Madame Gassier's garden, and——"

Madame Gassier.—I never had anything to do with him. I have a gardener who contracts with me. This gardener employed the surveyor. I do not know him at all. He brings me a plan: I say not suit at all. I pay him 2*l*. to settle the plan. I had to make a new plan myself. I am a foreigner. Englishman not know how to make a pretty plan for a house or a garden; no, no.

The Judge.—Stay, Madame Gassier, it is not your turn yet: it is part of our English plans to hear the plaintiff first.

Mr. Forrest.—It was her gardener who instructed me to make the plan for her lawn; and surveyors, when they receive instructions from persons in authority, like this gardener, never think it necessary to see the principal first. I have the gardener here as my witness.

Madame Gassier.—He should be my witness. Call him for me.

The Gardener.—Madame Gassier gave me orders to get the plan made. It was a very good plan. I advised the lady to settle it. She gave him 2*l*. I considered 3*l*. 10s. or 5*l*. more a very fair thing, and nothing should be taken off.

Madame Gassier.—I live in two parishes. I pay this man 49*l*. for twenty trees. Pretty fine, eh?

The Judge.—Your voice is better than mine, but I must be compelled to make you hear my voice.

Madame Gassier.—Most happy to hear you, Mr. Judge. Tell this surveyor to go about his business. I have got twenty witnesses that surveyors no use, no use. My witnesses are not here, but, Mr. Judge, call upon them, and they will tell you surveyors should not be paid for bad plans.

The Judge. — I am always happy, Madame Gassier, to hear your voice elsewhere, but you are breaking your contract with me to hear you in your proper turn. I must be heard last; and I am bound to tell you that, as you gave the order by your own witness, you must pay this gentleman and his witness.

Madame Gassier.—Never pay; no, no. I will have last word, then.

Verdict for the plaintiff, with costs.

ACTION FOR INFRINGEMENT OF PATENT FOR SMOKE CONSUMPTION.

Doulton v. *Stiff*.—In the Court of Queen's Bench, on 25th June, the plaintiff, Mr. Henry Doulton, of the Lambeth Pottery Works, claimed damages for the infringement of a patent taken out by him in 1854, for improvements in kiln-furnaces. The defendant, Mr. Stiff, is likewise the owner of extensive pottery works in Lambeth. The object of Mr. Doulton's invention was an arrangement of the fire-places or furnaces of these kilns to prevent smoke.

The specification stated that, for the purpose in view, over each furnace a fire-tile, or thick plate, perforated with numerous holes, was fixed; and over that again a chamber was formed to receive air, there being a slide or other means of regulating the flow of air into the chamber. By that arrangement the tile or plate became highly heated by the fire below, and the draught of the fire being inward to the kiln, the air would pass downwards through the perforations, and become still more highly heated than when in the chamber above: at the same time the air in the chamber might become heated by passing in contact therewith. By such means of obtaining a supply of heated air to this class of fires, the fuel would be better burned and the evolution of smoke into the atmosphere prevented.

On the conclusion of the plaintiff's case Mr. Knowles submitted that the plaintiff must be nonsuited, as his specification was insufficient.

Mr. Justice Hill said he should not stop the case, but would give the defendant leave to move to enter a nonsuit.

Mr. Knowles then addressed the jury on behalf of the defendant, and urged that Doulton's patent was not a new invention, and that not only was its principle well known, but it had been frequently applied.

A great number of witnesses (including Mr. Carpmael, the patent agent, and others) were called to prove that the plan adopted by Mr. Stiff, on the one hand, was novel and original. On the other hand, a number of witnesses gave their evidence to the effect that it was a combination of features long since recognized in the pottery district of Staffordshire, in what was known as Green's patent, Williams's patent, and Ferguson's patent. The plaintiff, it was urged, had laid great stress on the air being heated by passing over the hot tiles, and being passed off through the perforations: now, that feature was wanting in the arrangement carried out by the defendant.

The Judge, in summing up, said there were two points for the consideration of the jury—firstly, whether the defendant had infringed the plaintiff's patent; and, secondly, whether the plaintiff's invention was new. Both of these questions would require to be answered by the jury. The first question, in fact, involved the second. The plaintiff's patent was not for one machine, or a single arrangement, but for a combination. There was no doubt that the defendant had not used all the combination put forward by the plaintiff, but it was alleged by the plaintiff that the defendant had used a portion of the combination, and he had to tell them that, in point of law, that might be the case if the part of the combination was new and material. If the defendant had used an immaterial part of the combination, then the defendant had not infringed the patent: if he had used that which was not new it was no infringement of the patent. The jury must be satisfied that the defendant had used a part of the combination which was invented by the plaintiff, and which was new and material. Mr. Carpmael had stated that in his opinion it was impossible for the old Staffordshire kilns to consume the smoke, and yet there were three witnesses who had tried the experiment, and they positively swore that it did consume the smoke. That was a fact against scientific opinion. The plaintiff appeared to put great stress on the perforated tiles, and these the defendant had not used.

The jury retired for some time, and then said the defendant had infringed the patent, but that the combinations used by the defendant were not new.

Verdict for defendant.

PROVINCIAL NEWS.

Gainsborough.—The tender of Mr. Young, of Lincoln, builder, has been accepted for the erection of the lock-up house at Gainsborough. The amount of the contract is 1,740*l*.: the architect's estimate was 1,340*l*. Three other Lincoln builders, Messrs. Fox, Squires, and Jackson, sent in tenders.

Banbury.—The work which has been temporarily suspended at the building of Banbury Cross, according to the local *Guardian*, has again commenced, the second stage being now completed. Upon the panels it is intended to suspend from branches twelve shields, representing armorial bearings, monograms, or devices of royal or distinguished persons who have been connected with the history of the town.

Aldermaston (*Berks*).—About eighteen months ago, the large flour-mills at Aldermaston were burnt down. Mr. R. Sisley, of Godalming, has since had a new building erected, from the plans and under the superintendence of Mr. Charles Smith, of Reading, architect. The completion of the mill, says the *Reading Mercury*, was celebrated last week by a dinner, given in the building.

Ryde.—The new pier is gradually emerging from the Steam Ferry Works. The piles are of iron, which fits into a screw, like the bottom of a gimblet, and is turned into the soil to the depth of 8 feet: they are placed 15 feet apart across

and 20 feet apart, to the distance of 1,000 feet. It is to have a carriage-road of 18 feet, with a footway on each side of it of 6 feet.

Bath.—The architects of the new mineral hot-water hospital, the laying of the foundation-stone of which was noticed by us on the 18th inst. are Messrs. G. P. Manners, and J. E. Gill; and the clerk of works Mr. Wm. Melluish.

Leominster.—The New Corn Exchange here has been opened. It was built by Mr. Hardwick, of Birmingham, after a design by Mr. Cranston of the same place. The site forms one side of Corn-square, extending between Corn-street and "the Narrows." The main entrance faces Corn-square, and leads into a hall and staircase, through which the Exchange is reached. It is an irregularly shaped room, measuring at its widest parts 68 by 54 feet, the centre (to the width of 26 feet and of the whole length) being open to the roof and 36 feet high, while the sides are arranged under the reading-room and library. The central roof is nearly all covered with thick plate glass, by which, with four large windows in the side walls and still larger windows in the end walls, every part is lighted. The reading-room and library, each 26 by 19 feet, on the two sides of the building, are approached by the main staircase. The Exchange has been ventilated by the use of three of Muir's patent four-point ventilators, and the lighting of the building was entrusted to Mr. Thomas Brawn, the designs for both works being prepared by the architect. The architectural character of the erection is Gothic, with pierced parapets and columnar windows, somewhat Continental in general outline, but worked out with English detail. The materials employed are red bricks and Bath stone, with occasional relief from Staffordshire blue bricks, and with bands of black and red tiles in the panels over the shop windows.

Birkenhead.—Plans of the new graving docks at Birkenhead have been laid before the Mersey dock board. The works will be proceeded with when the Great Float is run dry. The estimated cost is 200,000*l.*

Correspondence.

THE NINE-HOURS MOVEMENT.

SIR,—I have been well pleased to see the reply of Messrs. Grey, Brown, Freeman, Facey, and Potter (secretary), to my letter of the 18th inst. as it is an evidence of conscious weakness, and at once shows the fallacy of the arguments by which they seek to impose upon the credulity of their fellow-workmen, and to justify their own proceedings. I pass over the harsh terms they apply to myself, and the motives they are pleased to impute to me. The use of such weakens their own position, and ill supplies the place of reasons. I have no ill-feeling for the working-classes, but, on the contrary, the fullest sympathy and regard, and I seek only to disabuse them in respect of the unholy confederacy in which they are involved, with possible ruin to themselves and all engaged in building operations, myself as much as they. These gentlemen say that "they do not stand up as the antagonists of machinery," but, in effect they seek to cripple its operations and nullify its use, when they complain of, what they call, the monopoly and misdirection of that power to their detriment, and the provision of no equivalent. In fact, they would restrict its application and use. Would this be a wise proceeding? What says an article in the *Times* of the 18th of June:—"Formerly the lace trade at Nottingham was carried on to a great extent in private shops attached to dwellings, the machines being worked by hand labour. Steam, however, revolutionized all this. The population has doubled in forty years, the production of lace is more than twenty-fold what it was, and large factories have taken the place of small shops." This will show the advantage resulting to the operatives from the introduction of machinery into a manufacture. But how many of the building operatives are there affected by the use of machinery for building purposes? Are the bricklayers, slaters, plumbers, painters, glaziers, plasterers, smiths, or labourers, interfered with by it? Not at all! It is only the joiners and sawyers, and *very slightly* the marble masons.

My respondents say, "at no period of industrial history have the working-classes, through the severity of the toil exacted from them, had so little opportunity for mental cultivation and moral elevation as the present." What proofs do they advance of this startling proposition? Do they compare the wages of the building artizan, or labourer, with those at the present time? Do they state the wages given formerly, say, thirty years ago, with those now paid? What were the circumstances of those halcyon days, that rendered the building workman richer, freer from toil, better informed, and more intelligent, than our poor unhappy workmen of the present time. I venture to assert that they were never better paid, better fed, better clothed, less worked (Messrs. Grey and Co. say six times more worked), nor more intelligent, than they have been for the last thirty years. Never have they been more cared for, more sympathized with, never greater attention paid to their mental improvement—as witness the establishment of the mechanics' institutes by the higher classes, yet which, unfortunately, languish for the want of the efficient support of the workmen, who will contribute rather to the union for a doubtful good, a certain evil, than to maintain institutions which benefit them in the highest degree by the instruction they afford, and the healthful employment of their faculties that they offer.

My respondents take credit for disinterestedness in "asking a reduction of one hour of their own work for the purpose of affording employment to those out of work." Such a misinterpretation of the word "disinterested" I have never met with. If the men were unemployed from slackness of work, and were unwillingly obliged to suffer with their families pinching poverty and all its consequent ills, I should have indeed admired the disinterestedness of the union, if they had gone to their employers and said, "We have full work and fair wages: we are in ease and comfort; but many of our fellow-operatives are starving. Let us work one hour in the day less, and receive corresponding wages, and take on our suffering companions to make up the difference, and enable them honestly and honourably to gain their bread for themselves, their wives, and little ones." What a noble sight would this have been! But how stands the question? There are thousands out of work. But why? It is because they *may not* take the wages which the builders can alone afford to give them: they *may not* work at a job if they or any others are not of the union: they *may not* work if their master even, who may not happen to be a unionist, dares to take a trowel in his hand and lay bricks at his own job, or help to remove materials. No! they *may not* do this; and, staying out of work, they have a pauper's charity from their own companions doled out to them, and they *must* stay out of work, for the unionists *compel* them. And, to maintain this tyranny over the men and masters, the unionists *disinterestedly* say to the masters,—You shall reduce our day's work one hour: we shall enjoy our ease and comfort; and you masters shall pay the piper!

Can we then wonder that only the first-rate builders can still fight their way on; that all are hampered by these slavish conditions; and that so many of the lower and middling builders have so little work, or have been driven into the *Gazette?*

THOS. L. DONALDSON.

Books Received.

Ancient Mineralogy; or, An Inquiry respecting Mineral Substances mentioned by the Ancients: with occasional Remarks on the Uses to which they were applied. By N. F. MOORE, LL.D. Second Edition. London: Low and Co. Ludgate-hill. 1859.

THIS is a learned and interesting volume. The first edition was issued twenty-four years ago, while the author was professor of Greek and Latin in Columbia College, New York. The work is now considerably improved.

Although the ancients, at least within the limits of history and tradition, possessed no systematic or classified science of mineralogy, the extent of their knowledge of minerals is shown, by this author's very diligent and successful researches, to have been really surprising beyond what is ordinarily conceived. "Much-laboured iron" and excellent steel were well known in times of great antiquity. Zinc was known as a metal as well as tin, and both were from time immemorial combined with copper into brass and bronze. There even seems reason, we think, to believe that the newly discovered aluminium bronze, which forges like steel, and has thrice the tenacity of ordinary bronze, must have been known to the ancients: at all events, they possessed bronze implements far superior to anything of the kind which we have till recently known anything of. The extent of the knowledge of the ancient chymists may be judged of from the following fact, which we state from our own knowledge, the present author not having pursued his researches into such a source, although it might have been of considerable service to him in his other and more popular and classical investigations. The old chymists, such as St. Dunstan and others, in speaking of a certain chymical composition, state, that its base *must* be *metallic*, but that egg-shell forms a highly fixative base, which is even preferable to anything else for the purpose in view. Now the substance of egg-shell is lime, and the base of lime is calcium, a *metallic* substance, so that it would seem from this that St. Dunstan, and other ancient chymists, perfectly well knew that lime was essentially metallic in its nature,—a fact which only became known to modern chymists in Sir Humphrey Davy's time, previously to which lime was always regarded as the very reverse of metallic, and of the earth altogether earthy. But even oxygen was well known to the old chymists. Thus Van Helmont says that when lead is burnt in the fire, the fire itself, in fact, becomes fixed in the lead, and can again be expelled; so that the lead is not destroyed by the fire, but can be recovered from it. This, in truth, means nothing less than that Van Helmont was quite well acquainted with oxygen, only he called it "fire." Other old chymists called it the "stony crassitude," a most significant and correct phrase, also, as regards one of the most prominent effects of oxygen, in the conversion of metalloids and metals into stony substances.

These few reminiscences of old researches have been noted down just as they have been suggested to us by a perusal of Dr. Moore's very learned and curious volume; and, indeed, it is both suggestive and amusing. There are interesting sections on the ancient knowledge of metallic and earthy pigments, and of marbles and other mineral substances employed in building, statuary, &c.; also of gems, saline substances, and many other minerals.

GUIDE BOOKS.

Practical Guide for Italy, north and central. By an ENGLISHMAN Abroad. 1859. London: Longman and Co.

A Guide to the Town of Berne. By a CANTAB. London: Longman and Co. 1859.

THE first of these two guides is intended to indicate, at the small charge of half-a-crown, all that is really essential, and to exclude all that is not so essential. It is not intended to rival Mr. Murray's excellent and exhaustive Hand-books, which are chiefly designed for those who have more time at their disposal than is requisite for the rapid scamper through the country to which alone the present skeleton Guide is best adapted. It contains "the routes from London by France and Switzerland, Savoy, Piedmont, the Swiss Italian lakes, States of Nice, Monaco, Genoa, Lombardy, Venice, Parma, Piacenza, Modena, Carrara, Lucca, parts of the Papal States, and Tuscany; with practical maps, plans, illustrations, and every necessary advice; hotels, posts, steamers, tariffs, rails; to see all that ought to be seen, in the shortest period, and at the least expense." Though not perhaps so likely to be useful to Englishmen in a time of war abroad, it is to be hoped a time of peace is not far off, when Italian guides will be in greater demand. The seat of war has been, meantime, specially kept in view by the "Englishman Abroad."

The second Guide is on a more enlarged scale, though a smaller book, referring, as it does, merely to a single town. Berne is now the capital of Switzerland, and the seat of the Federal Swiss Government, and has its chronicles, antiquities, arts, architecture, social, literary, scientific, and charitable institutions, &c. all of which are here noted, together with various other subjects of interest, for behoof of the English tourist, or temporary resident in Berne.

Miscellanea.

THE ARCHITECTURAL MUSEUM.—We mentioned last week, as to the *conversazione* which is to be held on Thursday, July 7th, that, in addition to the interesting meeting usually held in the Theatre, the whole of the South Kensington Museum will be open to the visitors exclusively. About 3,000 cards have been issued, and it may be hoped that many who are not yet aware of the value and extent of the Architectural Museum collections may, upon paying a visit, aid in carrying out its objects by becoming subscribers. The renewed efforts of the committee to enlarge the means, and extend the usefulness, of the Museum, deserve this response.

DESTRUCTION BY FIRE OF RAILWAY STATION AT READING.—The station of the South-Eastern Railway Company at Reading has been completely destroyed by fire. It was a wooden erection, and was set on fire by lightning.

THE works on the Russian railways (*Grande Société des Chemins de Fer Russes*) are pushed forward with such activity that there are at present employed nearly 49,000 workmen.

THE DUTIES OF ACCOUNTANTS AND AUDITORS.—In a tract published by Ridgway, of Piccadilly, Messrs. Alison and Waddel draw the public attention briefly to the duties of accountants and auditors, and suggest certain rules for the right auditing of the accounts, books, and vouchers, of public companies. These suggestions are offered for the consideration of traders, directors, and shareholders, and they appear to merit attention.

ST. ALBAN'S ARCHITECTURAL SOCIETY.—The fourteenth anniversary meeting of this society was held on the 17th ult. in the Assembly-room, at the Town Hall. The Earl of Verulam presided. There was a very numerous attendance. The Rev. J. G. Hale read the report; after which Professor Donaldson gave a description of the Old Clock Tower of St. Alban's, and exhibited the drawings and plans for its restoration, executed by him. Mr. Serjeant Woolrych read a paper on "Boundaries and Fences."

SANITARY CONDITION OF NEATH.—The condition of the town of Neath is complained of by the *Cambrian*. There are whole blocks of houses, in some instances as many as twenty-six and twenty-seven, it says, without a single convenience! There are scores and scores of houses, both in blocks and singly, without them. A large number of summonses are being daily issued, however, requiring owners of property to comply with the provisions of the Act of Parliament in this respect.

PURIFICATION OF THE THAMES.—In the House of Commons, on Wednesday, Mr. T. Duncombe presented a petition from Mr. Horace Jones, of Furnival's-inn, architect, suggesting a cheap, easy, and expeditious mode of correcting the evils arising from the putrescent state of the Thames; viz. by the erection of two temporary weirs or dams, one at London and the other at Vauxhall-bridge, the estimated cost of each being from 30,000*l.* to 40,000*l.* and they could be completed within one month; and praying, that as time presses and the pestilence approaches, a committee may be forthwith appointed to inquire into the feasibility of the scheme.

VALUE OF LAND IN WALES.—A sale of copyhold estates, under an order from the Court of Chancery, was held by Mr. Marsh, of London, at the Cardiff Arms, Cardiff, on Saturday last, when, after a spirited competition, the result of the sale was as follows:—Lot 1, comprising about 36 acres, and producing 35*l.* per annum, realized 1,700*l.* or nearly fifty years' purchase. Lot 2, eight acres, let at 8*l.* 10s. per annum, 350*l.* or about forty years' purchase. Lot 3, producing 1*l.* 10s. per annum 110*l.* or about seventy-three years' purchase.

DWELLINGS OF THE WORKING CLASSES AT HERTFORD.—A meeting of noblemen, gentlemen, clergy, and other persons connected with the town and county of Hertford, was held at the Town-hall there on the 25th ult. to form a building company to improve and erect dwellings for the working classes. Amongst those present were Viscount Raynham, M.P. the Right Hon. W. F. Cowper, M.P. Mr. Abel Smith, M.P. Sir Culling Eardley, bart. and various others. Mr. Abel Smith proposed the main resolution, to the effect that it is advisable to establish a company in Hertford, to be called the Hertford Building Company (Limited), for the purpose of improving and erecting dwellings for the labouring classes, in the county and town of Hertford, with a capital of 5,000*l.* in 1,000 shares of 5*l.* each. The resolution was unanimously agreed to, after various gentlemen had spoken on the subject, and shares were taken by Lord Raynham, Mr. Abel Smith, Mr. C. J. Dimsdale, Mr. R. Dimsdale, the High Sheriff, Sir Culling Eardley, Mr. W. R. Baker, Mr. E. H. Hoskins, Mr. J. W. Chesshyre, the Hon. and Rev. Godolphin Hastings, and the Rev. G. Yeats. The *Hertford Mercury* gives a full report of the whole proceedings.

FOUNTAINS FOR THE PARK.—At the Grosvenor-gate Lodge, Hyde-park, is a *lion's head* and *empty stone basin*. Where is the water? I recollect, as a small boy, watching the bubbling element issuing from the lion's mouth. In this hot weather why not turn it on again? "There's no ladle," says one *old* grumbler. Then, get one, and you will have the thanks of many a

THIRSTY SOUL.

THE GALLERY OF ILLUSTRATION.—Mr. and Mrs. German Reed have produced an entirely new entertainment in two parts, called "Our Home Circuit," and "Sea-side Studies," in which they display to advantage their very varied accomplishments. Mr. Reed has composed some very good songs and duets, in which Mrs. Reed sings admirably, especially "Let us all speak our minds if we die for it," and the "Bravura," at the close; while Messrs. Grieve and Telbin have painted a charming interior, varied by a sea-view, for back-ground, in the second part. It is a safe evening's amusement, with which no one can be disappointed.

REPAINTING THE NAMES OF THE METROPOLITAN STREETS.—Numerous workmen are engaged in various parts of the metropolis repainting the names of the various streets, with the addition of the initials of the postal district in which they are placed. The letters are painted black upon a white ground, and a bold, legible character has been chosen.

LONG-STROKE PUMP.—Mr. L. B. Schafer, Baltimore, Maryland, has patented an improvement in pumps, which consists in the application of the "lazy tongs" principle to the raising of the piston-rod of pumps. The end of the handle, instead of being fixed directly to the piston-rod, is attached to one link of the lazy tongs, and the end of the piston-rod to the link furthest from the body of the pump. Of course, the difference between the distance travelled over by the handle and by the piston varies according to the number of links in the tongs.

THE ROMAN PAVEMENT DISCOVERED AT BATH.—While the workmen, as we have already noticed, were digging on the site of the extension of the Bath Mineral Water Hospital, they discovered, 15 feet from the surface, a tesselated pavement. This pavement is now entirely uncovered. It is several yards in length. The pattern is described as the well-known Etruscan key, worked out in white and blue *tesseræ*, cut from Winterbourne stone and the lias of this neighbourhood. The specimen, though not one of the most elaborate, is interesting from its completeness. The outlines of the building to which it belonged are also easily traced, some courses of the masonry still being complete. The pavement, which has been carefully treated, will remain in its position until a permanent place shall have been made for it within the edifice about to be erected.

INHABITED HOUSES.—It appears by a parliamentary return, just issued, that the total number of inhabited houses in counties and parliamentary divisions of counties in England and Wales in 1851 (when the last census was taken) was 2,052,637, and in cities and boroughs 1,225,402, making a total of 3,278,039; inhabited by 17,927,609 persons. The number of houses rated to the relief of the poor in the metropolis at Lady-day in 1856, was as follows:—London (City), 16,682; Finsbury, 38,298; Marylebone, 42,726; Tower Hamlets, 85,513; and Westminster, 29,987.

EAST KENT RAILWAY.—The directors of this company report that the works throughout the whole length of the line are now in course of construction, and that all the arrangements have been made for the completion of the whole by the 1st of October, 1860. Messrs. Peto, Betts, and Crampton, are pushing on the works of the Western Extension. This portion of the line will be completed by the summer of 1860. Between Faversham and Canterbury the works are proceeding. The line is expected to be open for traffic to Canterbury before the end of the present year. Mr. Crampton, the contractor, is pushing on the works between Canterbury and Dover. It has been thought advisable to apply to Parliament for power to change the name of the company to the "London, Chatham, and Dover Railway Company."

FRIENDLY SOCIETIES.—In a recent lecture, Mr. James Tidd Pratt said,—Since 1793, 26,000 benefit societies had been enrolled in England and Wales, which was at the rate of 400 a-year. Of these 7,000 had ceased to exist, being at the average of 100 a-year, or two every week. This number was greatly on the increase; at present there were 20,000 societies, numbering 2,500,000 members in England and Wales. The failure of many societies arose from the false rate at which the contributions were calculated. The capital of societies now enrolled amounted to 10,000,000*l.* and the annual payments for sickness, superannuation, and death-money, exceeded 1,500,000*l.*—a fact which proved that the working classes were not wanting in those habits of foresight, forethought, and prudence, so essentially necessary for their happiness.

RELICS IN A WEATHER-COCK.—It is stated that a box has been placed in the new weather-cock on the spire of Notre Dame, containing relics of the true cross, of the holy crown of thorns of our Lord Jesus Christ, of St. Denis, the first bishop of Paris, and a martyr, and of the virgin St. Geneviève, the patron saint of Paris.

SPON-END VIADUCT.—The erection of a viaduct at Spon-end, on the Nuneaton railway, in place of the one which fell in some two years past, has been commenced. The contractors are Messrs. Dunkley, of Blisworth, and the amount 11,000*l.* The embankment is to be continued as far as the Sherbourne, where a stone arch, 20 feet span, will be erected over the river. There will be a stone arch 40 feet span over the road at Spon-end. The intermediate arches will be of blue bricks, faced with stone.

ESSEX ARCHÆOLOGICAL SOCIETY.—A meeting of this society was held on Tuesday in last week, at Barking, for the purpose of examining the ruins of its abbey and other relics, and thereby illustrating the history of the parish. The proceedings opened at the town-hall, a building of the Elizabethan era, it is said. The hall was quite filled. The vicar of Barking took the chair. The walls of the hall were hung with rubbings, and the tables strewed with other objects of interest. A paper on Barking Manor, by Mr. E. Sage, was read by Mr. Clutterbuck; another, on the Parish Registers of Barking, by the Rev. A. F. Smith, was read by Mr. King; and a third on William the Conqueror, by a member of the society, was read by Mr. Cutts.

SHAKSPEARE'S HOUSE.—A case in the Court of Chancery will have peculiar interest for the antiquarian world and the lovers of Shakspeare. A namesake of the great bard bequeathed by will 2,500*l.* for the formation of a museum in Shakspeare's house, at Stratford-on-Avon, and charged his landed estate with an annuity of 60*l.* for the support of a custodian of the house and museum, whose duty it would be to show visitors through them, and to keep a visitors' book for remarks in prose or verse. The trustees conceiving that the gift of 2,500*l.* might be contested on the ground of uncertainty, have declined, according to the *Bulletin*, to pay the legacy without the direction of the court, and hence has arisen the litigation.

ACCIDENTS TO PERSON AND PROPERTY.—The foundations of a house in Gregson-terrace, Everton, Liverpool, have given way, and a large portion of the gable has fallen. The house was left by the tenant on the previous morning, Mr. Hunter, from the surveyor's office, after a survey of the premises, deemed it unsafe to attempt to temporarily strengthen it, as the walls have given way in several places, and any attempt to give them strength by "propping" might bring down the entire of the building upon the parties operating.——At the Ebbw Vale Works, in order to relieve the traffic over what is known as the Great Bridge, a second one is in course of construction. As a train, drawn by horses, reached the bridge, it fell in, the horses, carriages, and men being carried down to a depth of many yards. Two men were killed, and another was buried beneath such a mass of stones and rubbish that it took nearly an hour to dig him out. He had received severe injuries. The bridge was about 35 feet long, and during the passing of a train the strain on the railway was equal to about forty tons.

A REMARKABLE SOLVENT.—It is now discovered, it appears, that if a piece of copper be dissolved in ammonia a solvent will be obtained, not only for lignine, the most important principle of all woody fibre, such as cotton, flax, paper, &c. but also for substances derived from the animal kingdom, such as wool and silk. By the solution of any one of these, an excellent cement and waterproofer is said to be formed; and, what is equally important, if cotton fabrics be saturated with the solution of wool, they will be enabled to take the dyes—such as the lac dye and cochineal—hitherto suited to woollen goods only. Hydriodide of ammonia, we may also observe, was not long since discovered to be an equally remarkable solvent of the most refractory, or, at least, insoluble, mineral substances. Now it is an interesting circumstance that ammonia, according to Van Helmont, and other old chymists and alchymists, was one of the requisite materials in the formation of the "alkahest," or "universal solvent," of the ancient sages! In the cupride of ammonium (if we may so call the solvent here first spoken of), we seem to have the solvent of silk which we lately desiderated in our remarks on the insulation of submarine telegraphic wires.